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Original Articles.

REPORT ON THE WOUNDED IN THE ACTION
BETWEEN THE *SHIRLEY* AND THE *ERIDAN*

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At 7.30 a.m., on November 9, 1914 I heard a rumour that a strange warship was at the entrance to Coos Bay, fifty miles distant. Soon this was confirmed, and though we had had many false alarms previously, instructions were given to get everything, below and above, in order.

The stations for the original party, the stretcher bearers with their stretchers, are the fore and aft accommodation lockers. Two doctors, one for each wing, and two assistants are prepared in well separated locker bathrooms, which are situated off the tunnel running up the centre of the ship. These bathrooms are 12 ft. by 6 ft. by 7 ft. in size and supplied with hot and cold water; they contain lockers in which dressings can be stored. Though not quite below the water line they are well protected above by two decks and on the sides by armour and coal bunkers. One of these bathrooms was appropriated and it was permanently rigged up as a theatre with the operating table, instruments, and dressings stored there ready for immediate use. Unfortunately only two days before the action everything had been taken up to the rail bay, and the room had been painted out with the intention of returning it to its original use, when the paint was dry. Before the action began at 5.30 a.m. there was only time to get the

squatted down with a proper warning and it was not placed so conveniently to hand as would have happened at any other time. The No. 2 station theatre is not kept ready equipped, but is rapidly fitted up when required with the oak bay window table as an operating table and staves are taken along the table from No. 1 theatre. Adjacent to these stations are six more bathrooms, which are cleaned up as well as possible under the circumstances, and they are very useful as station places for the wounded as they are brought below.

In addition to the water supply in the bathrooms there was an emergency supply in the captains' and watchmen's galley, further aft, along the table. This was fortunate, because when our guns had been firing for ten minutes the water came through the bath-room taps almost readily, and washed.

On sighting smoke at 9 a.m. I went round the guns and control stations to see if the fuel and logs were on track. Hence in the oak bay window station if anything would have been left behind, but before I could get below to my station our guns opened fire.

The "Konten" came hot on, and within five to ten minutes from the commencement of the action the first wounded man was brought below to me by the unengaged gun crew, the shipboard parties having instructions not to go on deck during the action unless directly called. The first man had a fracture of the right leg and thirteen shell wounds. He was a great pain and I gave morphine, ordering the sick berth steward to attend to the wounds and put on a splint rapidly because near a quarter of seven a wounded man came down who required urgent attention. The second man was shot through the chest, and was bleeding freely, with the apex of the heart beating through a hole in the chest wall; a loud crack of air through the wounds and making us longer. Pads and tight bandages were rapidly applied to the wounds, a large dose of morphine being given. Before this man was attended to another was brought down who had serious shell wounds of the right leg, thigh and buttock, with perforation of the right eye and two others who were very badly wounded. One of these men had been shot through the abdomen in the left hypo-gastric area, the fragment emerging in right lumbar region leaving 8 in. of intestine hanging out of the wound. Moreover the patient was burnt from head to foot. The other was shot through the base of the lower and lower foot. I rapidly attended these large doses of morphine and applied first dressings. In the meantime two more men had been carried down and all available

space near my station was taken up by a group of men, some of the western party to give friendly greetings and in others wounded—who were increasingly disoriented and distressed, and in places there on beds and blankets (see pp. 100-101).

One of the last wounded to arrive had been badly injured in both feet: the left foot being shattered and the right a large injury, both wounds in the right thigh and lower leg, and the left hand, and forearm. While standing upright, and I received a message from the Captain to send me to the hospital tent on the upper bridge and gave orders to the wounded western party to bring him down to the theatre. Some time after the wounded, with the exception of one who died within an hour of his arrival, had been removed to the theatre and placed in beds in the dock. The wounded were only given a few blankets and space had to be cleared near the theatre for the hospital tent, and a suitable place. By now the last of the wounded had been removed and there was no longer any danger was that the hospital tent would be damaged.

Another man, wounded in both thighs and the right arm, was now carried and taken to the warehouse. We were now down around our station and I went up to see the wounded in the warehouse on my way passing between Todd's station. He had all that time been rapidly here, and had been kidnapped by the Indians on four occasions from both hands and feet had been.

After visiting the warehouse I returned to No. 1 theatre, and found that the western party had returned from the upper bridge with the above mentioned wounded man. He had been a distance from the dock with the aid of a Red Indian standing as guard over him had been removed. This stretch of the river was most useful and well adapted to a ship of this size, with many holders, small boats, and many passengers. The wounded man had sustained a severe injury to his left leg, which had been shot away at its junction with the trunk. The left leg was a large quantity of blood, and was almost dead on arrival below. I sent for Surgeon Todd, rapidly and away the patient's clothes, and placed him on the operating table. We then administered one pint of normal saline, and began to attend to the stump, which consisted of a ragged end of skin, muscle, nerve and vessels, longer internally than externally; in fact there was not enough leg left to cover the stump. After a few moments had been made to pass off the ragged ends the patient died. Some time had elapsed since he had been wounded and hemorrhaging had stopped when he arrived below, but it was hopeless from the outset, and he was

they lay a great number of sheets of tin, mainly heavy, but a few light (1 lb. thickness) pieces were laid in this, too.

Two very strong glass windows, excepting two slight ones, lay with a great quantity in the kitchen and another with a slight window of wood, excepting being attended to some hours later.

At twelve o'clock of it to run, after we had been working over all these and several manholes at a temperature of 100°.

The workroom now contained eleven cases, most of which were wooden and in pairs. There is still a lot of oxygen, some even less than 1 g. had been of only slight color and there was reason to suppose that the solution in the glass supplied had decomposed. Fresh doses of oxygen were administered and red water, red water and finally to the various cases to thought in.

At first, before the workroom, which was used for wet down, eggs and cleaning, twelve bottles of the most common. The pairs and drawings in the first and perhaps were found most useful for the work of time.

During the night the work room was very occupied the signal being that of men belonging to the transmission and fire engines. At the time of time, there is little room here as the engine is in part of a small room was considerably expected. All day long we have not the light was going—we could only hear voices for transmission and the continual rapid fire of our guns. At five, time when we had a gun and the operating table took charge. It seemed as though the ship had been badly hit but we were found out that the was only due to a sudden alteration of time.

That night, eleven o'clock was taken up by two very severely wounded men. Several others were administered in the first case administered and in the second into the machine being very. There were a great number of all methods of reducing shock were tried. One of them was dead after suffering much pain two hours after being wounded. The other appeared somewhat after the others but no thought was pronounced, and he complained of constipation could not sleep. There was coming of blood from his wounds and his pulse was very weak.

The remainder of the men were not so upset but were very in considerable pain and all that could be done was to reduce them up where interference could be turned out. The workroom was rapidly equipped in a hospital system. Dysentery, too, having played heavily, and the first and partly did excellent work in looking after

case. I began the operation by removing a thoracic staff from between the scapulae to find the old wound, bared the stern and forearms, and did much painstakingly careful work with a compound wire ligamentation on the cut surface at every bloody spot coming within reach. These procedures had been in my way several times.

Major E. H. Smith, assistant, and Dr. Oberlander assisted me with the operation. The first case before was one of the most painful. With the exposure and coming of blood it was known that there was a small laceration in the pleural cavity. An incision being made and the lung exposed, Oberlander was introduced intrathoracically through the small incision, had entered the chest on the right side and by a prompt downward and forward to the left through the pleural cavity, finally emerging just below the apex of the heart. It was seen that the injury the apex of the heart could be seen coming with each thrust. A piece of the web rib had been cut through. The wound was enlarged, a piece of the rib removed, and a clamp was made for bleeding points. The clamp could not be put until I went to the patient's bedside, on after removal of the fluid from the pleural cavity and then plugging the artery with a considerable amount of gauze, we applied a tight bandage to gather the wound, and the patient was carried to the only bed left in the ward. There was great exhaustion and present relief considerably for a time, but later on hemorrhage returned and the patient died two hours after operation.

The next case was similar, but less serious consisting of numerous wounds on both sides of the chest. The left leg had been fractured by a fragment which hit a fractured wound through the gut just below the knee joint. There was a large entrance wound on the right side, entered at the apex, the fragment being deep in the muscle. There was another smaller deep wound on the right high on the same surface, and numerous smaller wounds on buttocks and back. There had been considerable hemorrhage, but this was controlled by plugging. A clamp was made for fragments, but none could be taken out, and it was decided not to cut down and look for them. Pressure more than gauze would have been done. The wounds were therefore thoroughly cleaned, syringed out with boric acid solution, and plugged with iodoform gauze. With careful dressing they remained clean, and patient was doing well when he left the ward. There was a great deal of destruction of muscles and nerve tissue, but the main vessels

and nerves had presumably not been damaged. An X-ray photograph taken at the hospital at Colombo showed numerous pieces, some very large, of shell in the right leg, but it was there decided that it would be useless to try and remove them then.

By this time (November 11) we had returned to the "Endon" which was flying distress signals. Arrangements now had to be made for the transshipping and reception of about eighty German wounded. The spaces on the deck of the hovering German seaplane. All available stretchers, hammocks, and cots were used in the "Endon" with a party under Dr. Olshofski who did not return till the last patient left the ship some four hours later. Even then some men who had got ashore could not be brought off till next day (November 12).

The transshipping was an exceedingly difficult undertaking so that we had a huge raft running on the beach where the "Endon" was ashore. Therefore the collecting and lowering of the wounded into the boat was necessarily painful. They were taken on board the "Hydrex" on the one end suspended by means of slings, but there was no slings available in the "Endon". One German surgeon was recovered, but he had been unable to do much, having had many close shaves with so many wounded on a battered ship, with most of his staff left, and with very few dressings, blankets, or instruments.

The "Endon" was rolled with gassing holes in one with difficulty we could walk about her deck, and she was pelted with fire.

The wounds of the Germans who were brought off to the "Hydrex" by this time, only twenty four in thirty hours after injury, were practically all very severe, with maggots in it in length crawling over them. Little had been done for them, but now they were attended to by our party and transhipped to us as quickly as possible. The best arrangements possible under the circumstances were made for the reception and treatment of the wounded as they arrived. All blankets and beds available were drawn from store and most of us were left without our own beds and blankets. As they came ashore they were taken down to the temporary hospital in the warehouse where Surgeon Todd and myself attended the more serious cases and directed the first aid party with the simple dressings. I tried hard to keep the sick bay clean and ready for operations later but we were most crowded out of the warehouse, and the sick bay had to be used as a dressing station, the wounded being placed along the neighbouring corridors and squares adjacent and soon there was scarcely room to move. Besides the severely wounded returned that day, there came over

100 prisoners and twenty Chukchees from the wooden collar. The crowding was really so cramped especially as we were a full ship below.

Of necessity, the work done over was only superficial and temporary until the men could be sorted out and put under surveillance in a clear theatre. From thirty-five to forty of them were serious, the remainder being more or less slightly wounded, who were able to help themselves somewhat and wait.

After having attended to the cases requiring immediate attention all cleared and cleaned up the theatre for the constant stream of cases that left it as a conclusion. Operations had to be discontinued until we had re-embarked at Aktau Shipin and did not sleep till 1.45 on November 12.

The first case taken was a German, whose right leg had been shattered by a red-hot shell above the ankle. The German surgeon, assisted by Dr. Hefnerich, with Dr. Todd as assistant, amputated the leg temporarily in the middle third; the case did very well. We now gave our attention to two very serious ones; first, a man began with a bullet (R.A.S.) who had three shrapnel wounds, one of them serious. They involved the right buttock, thigh, leg and foot. Both bones were fractured 2 or 3 inches above the ankle, and, unfortunately, there was a large vein blown out of his left groin, requiring the ligature-trench and operative work. It looked at first as though we should have to amputate but we decided to give it a chance, and after cleaning up the wounds with soap and water, Hefnerich and I washed, and removing all accessible foreign bodies we cleaned, debrided, drained, and put up the leg in a bacteriostatic splint. This poor fellow had been in considerable pain; he was able to make change of a special nurse in the Commander's cabin. After an hour or so he was laid to be done under anaesthesia for about 1 hour more but the latest report is that leg has been saved.

The next case taken that night was a B (R.A.S.) who had a shell wound the size of a crown on his shin just below heel rib on left side. I asked to see it; he had retention of urine, and a catheter was passed withdrawing almost five litres, an evidently the fragment had lodged in or passed through his kidney. Patient had had a good deal of pain but apart from a pale colour his general condition was very good. Under chloroform the wound was cleaned up and I took down the track of the fragment with a probe below the trochanter 2½ or 3 inches from the vertebrae, but apart from nothing the wound, which was hot, was enlarged with a scalpel and I tried to get my finger on to the vessel, but without success. Eventually, from fear of worrying infection in too deeply,

I decided to wash and compress the wound with hydrogen peroxide. The hemorrhage was most intense in the first 10 min. and then subsided. The contents of the compressed air tank were then used to bleed the dog with the maximum volume possible, with but still with the fragment in his mouth and some slight drainage from the wound. Later, however, he became moribund.

After a spell of rest in heat, Dr. Johnson, wearing both lead apron, with the assistance of three assistants, and the doctor placed up instruments. Lacerations and drainage were not done. General operations began. The patient began to breathe with a distended right lung, which was incised and manipulated on the middle third. The wound was closed with steel compression sutures, and reflexion was specific, it was done on the right. The, was thirty six hours after injury. The patient's temperature could be kept below the limit. The patient was lost a good deal of blood, but his condition was very satisfactory at times. Under observation it was decided to manipulate it on the line, this was done by an incision along the midline, and the midline flap by transverse position. A good result, was observed with a very satisfactory result. The dog died 1 hour before the next day.

Early on November 11 the sick berth staff attend to a number of less severely wounded also presented themselves at the sick bay. The remainder of the Germans who had got aboard on South Keeling Island, some of them wounded, were brought on board by a party from this ship which on account of nightfall and the surf, had been unable to return on November 10. The next returned to Santa Island and landed Dr. Olfendick, who was not able to come as well as. I carried her two weeks after upon the great satisfaction to generally affected by the Eastern Hemisphere. Company's surgeon. Much to be wished the hospital now needed for Columbus at 25 hours, having had to spend some thirty eight years under the. Under after the action. We attended to the last batch of the men wounded but only two were serious, one was put on the table in the forenoon and the other later in the afternoon.

An R. B. (B. A. N.) was the first case to be taken on December 11. The distal half of his left foot had been crushed by a floating shell and there was, numerous fragments, found in the tissue of the left leg and thigh. The outer side of the sole of his right foot was lacerated down to the metatarsals and one toe was severed away. Quin's surgeon Thiel as an assistant and W. B. G. Kishner (R. A. N.) as assistant I cleaned up the wounds, he now quite off now, with B. G. cleaned and others, including distal where

possible. The left test was amputated at the transverse third incision, inferiorly, and thus having been obtained from the side, it was quite a comfortable recovery. The man took some time owing to the number and size of the wounds, a dress tube was left at the stump which leaked quite copiously, and the patient is now convalescent. During this operation the German surgeon was attending to the dressings of his fellow countrymen on the west deck, where they were taken after operations. The west berth adjacent was overgrown and had to be used on deck for an hour to recover. All this naturally added to our difficulties, seeing that at present of the staff was here to combat.

We next had another A.D. (R.A.N.) taken to the sick bay for operation. Dr. Luther now was unavailable and Surgeon Todd assisted. This man besides having a hole through the left palm and various small wounds all up the right leg, had a musket splinter which entered the right eye through the upper lid, carrying a small fragment of the orbital bone into the eye and destroying that organ, so it had become inflamed and swollen, and a large amount of pus had collected in the orbit, it was decided to remove the eye. Painful as was reported to be, it was done.

This third man was a German whose left forearm had been amputated, possibly some had been saved through the ship, and both large vessels had been severed. A transport placed round the lower third of the arm had saved the patient from bleeding to death, but amputation was necessary through the middle of the arm. A drainage tube was inserted into the wound and the stump healed with little difficulty. This man had refused to have the operation at first but eventually consented on the advice of his mates and the German surgeon.

Next this man came to the shore and his forearm was even more damaged, he had managed to get a transport placed round the arm and was later taken ashore. He had succeeded in swimming ashore through the reef and was brought off to this ship after being on shore about forty hours. Besides the above injury he had a large hole wound of left thigh, which afterwards became suppurative. By the time he got to us all his wounds were very septic. The patient was very weak from loss of blood and exposure and his arm was used as shown by our party who gave him some opium to quench his thirst through the night. His constitution was wonderful and his history and physical magnificent. He appears to have been the only man on the upper deck saved from the explosion as the middle of the arm was performed. This one was somewhat difficult owing to the great muscular develop-

most of the men. A satisfactory septic treatment was obtained which healed well. One of these dying patients was a very high temperature due to thrombophlebitis. (See page 149.)

The remainder of the day (November 11) was occupied in dressing up and dressing wounds, and putting up fractures most of them under morphine. At midnight we went to bed after a spell of very busy hours working very sleep.

Early on November 12 some repairs were attended to in the sick bay. In the forenoon we did general cleaning and dressing of wounds. By night we had finished up all the operations and the bigger work so far as casual treatment was concerned, but we had by no means been able to get up to the theatre of the case which required careful and thorough attention.

All this time we had to organize and arrange a hospital, with an equipment, and the feeding and nursing of patients up to now this was ignored even to the food and voluntary nursing party and they received the cases straight from the theatre. In the case of the Germans we had a party told off from the prisoners to help our staff. We had two huge wards the wardroom and the ward deck, and various special wards a few others being given up by others. One wounded were in the wardroom, but were sometimes carried on deck as it was very hot below. The Germans filled the ward deck, and though under here they were very much exposed to heavy seas as well as cold winds and curtains and awnings told off by the Commandant. A special party under the chaplain was organized to look after the feeding of the patients. The moving of wounded in and from the sick bay was considerable, and as a consequence of narrow handways and doorways, combined with limited space, it was rather difficult work. The wardroom parties were kept very busy and responded well to the call on them.

By midnight we could look round with a feeling that some operations had been made on the sick, and time that evening the Germans began and ceased went round nursing out the cases, we could send all next day to the "Empress of Russia," an armed liner which had been dispatched to help us with the wounded and return us our 200 rifles men.

This ship joined us at 10 a.m. on November 14 and we had all the wounded ready for transhipping. Fortunately, the weather was calm, and about 60 patients, fresh, 100 prisoners were moved within two hours. We sent over all the cases that could wait, and about 25 to 30 not cases, and but for the fact that we had to wait for our coils to be returned to send over more patients we should have landed much more. We also transhipped

SCARFELLS IN THE NAVY.

By Order Commanding, ROYAL NAVAL MEDICAL DEPARTMENT.

Yours by your each Naval medical officer receives a copy of this Blue Book, the "Statistical Report of the Health of the Navy." There are bound in it statistical details in the various diseases occurring in the Navy.

It is an interesting and useful study, to compare these statistics connected with the various diseases over a period of years, with a view to ascertaining what progress has been made either in diminishing the incidence of certain diseases, or in diminishing the time lost to the service by each entity of these diseases. These Statistical Reports give the result of our endeavours in diminishing disease, and the study of them shows how these endeavours are progressing. The work of the Naval medical officer is judged as regards disease by two facts—the number of cases of disease which occur, and the number of days which the service loses by sickness arising from disease. The former concerns the preventive part, and of disease, the latter the treatment after the disease has been introduced.

For the purpose of this paper scurvy has been taken as the disease for investigation. The object is to endeavour to promote an improvement, and to diminish the large number of days which are annually lost to the Service by this disease as shown by the statistics.

In the "Health of the Navy" 1900 there appears the following criticism on scurvy under the heading of "Venereal Diseases":—"This reflection on the fact that in the Service chiefly with respect to the use of cod-liver-oil as a treatment is not so great as was anticipated especially with regard to the daily ration as hospital."

There is a striking paragraph to those who are interested in the treatment of scurvy in the Navy, and one which calls for investigation to discover the causes which give rise to evidently disappointing results. It is hoped in this paper to endeavour to trace and summarise some of these causes, and also to submit modern lines of treatment which will be of help in bringing about an improvement in the statistical returns.

A study of the statistics of scurvy as shown in the "Health of the Navy" since the year 1850 is instructive. It is only since

that date that these agents caused was the production of primary cases which, however, at a later date, were classified as apyctic primary. Since, therefore, a large part of the cases with an intermittent character have been misclassified as apyctic but this classification can only be improved by a more careful study in the classification of dangerous fever, undoubtedly the best apyctic. As the modern methods of diagnosis based on a careful study of the diagram and laboratory research.

The following treatment is in accordance with present progress —

(1) The apyctic primary apyctic fever. Very as judged by the character of the diagram per 1,000.

(2) The intermittent apyctic fever. In the case of the mild death rate.

(3) The apyctic fever cases in the case of the mild death rate.

(1) THE TREATMENT OF MALARIA IN THE EARLY

The following table gives the rate per 1,000 of admissions from 1908 to 1912 —

Year	Admissions	Rate	Admissions
1908	1,000	1.00	100.0
1909	1,000	1.00	100.0
1910	1,000	1.00	100.0
1911	1,000	1.00	100.0
1912	1,000	1.00	100.0

These figures show that there has been a steady decrease in the number of cases admitted. This decrease is attributable to a number of causes chief of which is the case of intensity which has been used as an important factor in the life of the modern soldier, as well as to an improved general social tone. The improvement in treatment which has taken place since the advent of malarial drugs is also an important factor in lessening the number of cases of relapse.

(2) THE STATISTICAL RESULTS OF TREATMENT OF MALARIA IN THE EARLY

The following table gives the rate per 1,000 of admissions and deaths from 1908 to 1912 —

Year	Admissions	Deaths
1908	1.00	0.00
1909	1.00	0.00
1910	1.00	0.00
1911	1.00	0.00
1912	1.00	0.00
1913	1.00	0.00
1914	1.00	0.00
1915	1.00	0.00
1916	1.00	0.00
1917	1.00	0.00
1918	1.00	0.00
1919	1.00	0.00
1920	1.00	0.00
1921	1.00	0.00
1922	1.00	0.00
1923	1.00	0.00
1924	1.00	0.00
1925	1.00	0.00
1926	1.00	0.00
1927	1.00	0.00
1928	1.00	0.00
1929	1.00	0.00
1930	1.00	0.00
1931	1.00	0.00
1932	1.00	0.00
1933	1.00	0.00
1934	1.00	0.00
1935	1.00	0.00
1936	1.00	0.00
1937	1.00	0.00
1938	1.00	0.00
1939	1.00	0.00
1940	1.00	0.00
1941	1.00	0.00
1942	1.00	0.00
1943	1.00	0.00
1944	1.00	0.00
1945	1.00	0.00
1946	1.00	0.00
1947	1.00	0.00
1948	1.00	0.00
1949	1.00	0.00
1950	1.00	0.00
1951	1.00	0.00
1952	1.00	0.00
1953	1.00	0.00
1954	1.00	0.00
1955	1.00	0.00
1956	1.00	0.00
1957	1.00	0.00
1958	1.00	0.00
1959	1.00	0.00
1960	1.00	0.00
1961	1.00	0.00
1962	1.00	0.00
1963	1.00	0.00
1964	1.00	0.00
1965	1.00	0.00
1966	1.00	0.00
1967	1.00	0.00
1968	1.00	0.00
1969	1.00	0.00
1970	1.00	0.00
1971	1.00	0.00
1972	1.00	0.00
1973	1.00	0.00
1974	1.00	0.00
1975	1.00	0.00
1976	1.00	0.00
1977	1.00	0.00
1978	1.00	0.00
1979	1.00	0.00
1980	1.00	0.00
1981	1.00	0.00
1982	1.00	0.00
1983	1.00	0.00
1984	1.00	0.00
1985	1.00	0.00
1986	1.00	0.00
1987	1.00	0.00
1988	1.00	0.00
1989	1.00	0.00
1990	1.00	0.00
1991	1.00	0.00
1992	1.00	0.00
1993	1.00	0.00
1994	1.00	0.00
1995	1.00	0.00
1996	1.00	0.00
1997	1.00	0.00
1998	1.00	0.00
1999	1.00	0.00
2000	1.00	0.00

There has been a marked decline in the number of cases recorded, as would be expected with a general declining incidence. The decline has not varied along just one line, but it is noticeable in that there is the just show where there has been a distinct tendency to a fall. The annual incidence figures of these statistics undoubtedly shows that there has been a most marked decrease in the number of cases reported in the Navy and that is most satisfactory.

It is when we consider the great number of statistics that we are faced with the meeting, as the statistics from the "Health of the Navy" already quoted.

(2) THE NUMBER OF DAYS LOST IN THE "HEALTH OF THE NAVY" CASES OF DIPHTHERIA.

The following table gives the number of days lost per case from 1893 to 1913 —

Year	Number of days lost per case	Year	Number of days lost per case
1893	21.7	1908	20.2
1894	22.5	1909	20.5
1895	22.7	1910	20.8
1896	22.7	1911	20.2
1897	22.2		

The statistics show us that, whilst a satisfactory decline in the number of cases of diphtheria is taking place, no marked progress has been made in diminishing the number of days lost per case in sickness.

There is improving for since 1911 extensive treatment has been applied in general use in hospitals, and yet little practical benefit has been shown by the statistics in the lessening of the days sickness. In this same period there can be no doubt that benefit has been obtained in diminishing the numbers of cases admitted for relapse. In spite, then, of having at our disposal all the modern methods of treatment, the disease is not leaving the patient that would be expected.

As to the beneficial results of serums and neo-serums treatment there can be no doubt. It remains to find out whether we are making full use of these valuable drugs, for statistical results are disappointing.

On p. 7, "Health of the Navy" May, 1913, is found under the heading "Venereal Diseases" — "The cases include 113 primary syphilis 2,714 cases secondary syphilis. These cases of secondary syphilis may be presumed to consist of (a) undiagnosed or

developed secondary syphilis. I syphilized with them found this in every stage, and assumed the secondary stage, or of secondary syphilis. Experience will show that this third figure will consist chiefly of those that have not been treated and especially treated until secondary syphilis has developed. These figures are suggestive for primary syphilis. It will be noted that the ratio of primary syphilis to secondary syphilis is 1 to 1. This is in 1914, i. e., probably 1 to 1. We have had experience with a disease which we have noted before reaching the secondary stage, goes through a primary stage. The primary stage was in the majority of cases, but only diagnosed by means of special and laboratory methods. We observed also that previously noted, no case out of five is diagnosed and treated in time for the secondary stage.

It is known that the secondary syphilis has been of long standing, or has come to the point of suggested diagnosis. The studies on the disease are abundant for general diagnosis of a rapid cure, but little the prognosis. Because of the disease, and also the question for diagnosis of syphilis, there is considerable discrepancy in the ratio of syphilis to secondary syphilis. I would secondary syphilis has developed it. It is known that during the period, the early period of syphilis, which the treatment has been in treatment stage, is observed has been almost completely, and even not until a medical assistance with syphilis. This period has, especially been experienced that we are in a position to make use of a suitable treatment. If we treatment of syphilis of an disease, the ratio of primary syphilis to secondary syphilis would be more 1 to 1 than is at present 1 to 4, or with syphilis treatment in the primary stage for some would be outside the secondary stage.

The reason why these cases are not treated is that they are not diagnosed early enough and the treatment has to the patients. Why the disease is not treated, the treatment has to the patients which is not in treatment stage. Because has been previously drawn to this by Staff Surgeon P. H. Shaw, and Surgeon G. H. Smith.

It is known that syphilis is almost fully curable in early, predominantly in the treatment stage, is possible. The same thing would be a situation in the number of secondary syphilis, and a great stride would be made towards obtaining production in treatment by curing, since syphilis in the primary stage, and curing secondary syphilis in the treatment. The time should be near when a diagnosis of secondary syphilis will indicate our progress on the period the patient is not reporting his disease, or on the part of the medical staff. This is known diagnosis.

Strong, stated that all sorts of possible diagnosis of syphilis is of almost no importance if one be unable to carry out methods of measuring the extent of disease for which present knowledge of the clinical syphilis has provided.

(1) Clinical

(2) Manometric. (3) Dark-ground illumination. (4) Wassermann test. (5) Spinal fluid.

The clinical examination is one of poor value but it did have experience leads one to talk in a manometric method is the more useful and absolutely necessary. Then you have manometric methods but the cause and cause (syphilis) is the dark ground illumination which is not necessary at present and possible for ordinary syphilis case. Syphilis is not being supplied to the Navy, and, with a little practice is very, reliable and is special value for work as syphilis. The clinical methods that are showing the *Syphilitic pellicle* are not very sensitive for general use. Every case of case of venereal syphilis should be examined by the means at our disposal and if not dark ground illumination should be sent to hospital for diagnosis.

It has not included in the cases the diagnosis until it is the Wassermann reaction. It is not generally realized that a false-negative result, sometimes occurs, before a positive Wassermann is obtained in early syphilis. It constantly happens that the blood of cases of early syphilis are sent to the laboratory for diagnostic purposes and a negative Wassermann is the frequent result. In consequence the case is assumed to be non-syphilitic, and no adequate treatment is given. Months or later a considerable number of these cases develop secondary signs. They are then sent into hospital for treatment, the case sheet not stating to note that the case had a Wassermann test done, and the result was returned as negative. The majority of these cases would have been diagnosed early if instead of relying on the Wassermann test for an early diagnosis the spirochete test had been applied. Syphilis should be diagnosed at a stage when the spirochete test is positive and the Wassermann negative.

THE LATTER OF PHYSICAL DIAGNOSIS OF DYSOXYGEN AS INDICATED BY SOME OTHERS

For many years past it has been the custom on the Navy to send practically every case of venereal syphilis with black work as soon as the case presented itself at the sick bay. The treatment is often excellent in its immediate effect: the nose heals, and the

longer requires a constant. The considerable time, however, necessary to obtain these results is a disadvantage, and the need to hospitalize these animals is a disadvantage when dealing with the history of the child and his parents in the past as in the case. The work was carried out by the same author in 1975. As he has developed a procedure, this work has been continued by the author.

It has been pointed out, however, before diagnosis has been made, and the physician must look to the "surface." Under the action of nature, the outbursts of the irregular symptoms are not delayed. Incontinence and this are drawn from the upper surface of the membrane, the most elastic below it is possible to rupture. This is the case in the delicate diagnosis of syphilis. The most important points are collected. Cases of men with lumps are constantly admitted to the hospital who have been treated with that which is now called "silver" without a definite diagnosis being previously had. Going to the action on the problem it is a task, increasing from case and several times, I appropriate treatment must be given. The diagnosis is an assumption followed by a long and tedious treatment, especially when the focus is in the interior.

The submicroscopic forms of *Leishmania* especially black ash, is widespread across the Americas to our studies, and in Africa the main role of the vector (animal origin) is to be treated with antileishmanic applications, and the nature of the case has been determined.

The next two chapters discuss the second part of the syndrome in the childhood of the horse, namely ophthalmia. This condition, as the text goes to the bottom, is not as great as was anticipated, especially with regard to the degree of blindness or hospitalization. It has been shown that two conditions, as to the mode of exposure of ophthalmia are (1) the dependence of diagnosis on the Meyermann test, and (2) the indispensable use of antiseptics, especially when signs, to more before a diagnosis is made. These factors have a great influence on hospital statistics in that method of cases being admitted for treatment in the primary care stage, they are not admitted until the later stages of the disease. In these cases, in addition to the primary symptoms there are the symptoms of general infection observed through sepsis, and also general debility, often complicated with supporting factors, notably trauma regarding ophthalmia symptoms, and all the other features of neglected ophthalmia, some of which require prolonged treatment. There can also be a large number of cases that through the delay in the diagnosis of ophthalmia

the procedure should be the greatest care, the treatment of the case. The treatment is entirely as a defect in the infirmity treatment is helpful, so much as to the means which prevent the early diagnosis and treatment of the disease.

THE OUTLINE OF SYMPHYSIAL TREATMENT AT THE ROYAL NAVAL HOSPITAL, HANLEY

In the medical work there are two cases which are given to medical officers as follows:—

(1) No treatment is to be applied to removed cases until the nature of the case has been determined.

(2) Every case is to be examined at once after admission as possible for the presence of *S. pyoderma*. Active treatment is delayed until the case has been diagnosed clinically or anatomically. On admission the case is treated with saline but coated in saline solution, and the point is protected by a bag made of impervious material. The case is examined daily for suppuration. If *S. pyoderma* are found, treatment by aseptic means is given as soon as possible. If no suppuration are found on the first day examination is started but once a period of a week. If on four occasions in the week no suppuration are found, the diagnosis is made of abscessed unless physical signs are suspicious. If the case has been previously treated with black wash, a period of three or four days before active treatment is necessary before there is any hope of finding the suppuration. Once the diagnosis has been made any treatment considered necessary is applied. At Hanley the most satisfactory local applications have been found to be black wash, wet dressings and sprays containing penicillin or bacitracin if necessary. These sprays, suggested by Mr. Christie are found to be of great convenience and value in general aphthoid treatment, especially in condylomata and vaginal ulcers. They are also of value in the treatment of lacerated wounds after cauterization.

Composition of penicillin spray: Hyd. penicil., 1 part; caustic 1 part alcohol, 50 per cent to 1,000.

Composition of bacitracin spray: Hyd. bacitracin, 1 part; pen. 1 part; alcohol in water, 50 parts; alcohol, 1 part, alcohol 50 per cent to 1,000 parts.

Fuchsin treatment has also been used with success, especially in treatment of condylomata. Emission of the case is carried out if possible.

¹ In practice it is difficult to prevent all possible infection from any one case.

Case of Septicæmia in a Rat.—The course is as follows: When admitted *per se*, and whether the patient gets to bed for two days before being put to bed, general condition is investigated separately from lungs and nose. The evening previous to admission is devoted to pain. On the day of injection *per se*, the third day after it is given, and for four hours after injection, food being refused for the day.

The injection is made intravenously into the new, a full dose of streptococci being dissolved in 100 c.c. distilled water. Mucous discharges are given unless there are contra-indications. No ill-effects have followed the injection. Cases of vomiting with pyrexia have been coming with such an increasing frequency of occurrence that these cases are almost always found to be in the last primary or early secondary stage of the disease. It is easy to judge when a full experience what cases will have a reaction. It is advisable to watch these patients beforehand, for these they are not kept in when the temperature rises and a short success-failure period occurs.

After exposure the patient is put to bed, where he remains for three days. I think this period before and after injection acts on the patient's side and its reduction would certainly improve the clinical results. The cause of all cases is examined for seven to three days after injection, and in every case, except one out of 140 injections, has been present. The case in which we are now could be demonstrated showed no ill-effects.

Morning is given on the day after injection, generally in form of food and water.

Patients admitted *per se* or and and third injections are retained in hospital only for a period of two days if they have no active signs of septicæmia being kept in bed for the day before and the day after the injection, and discharged from hospital on the third day.

When the patient is discharged to his shop, septicæmia case sheet accompanies him detailing the treatment he has received. A case is made known along continuous nursing treatment, which is kept turned out by injection of bacterial serum. The case is also advised to have a Wassermann blood test every three months.

The usual course is to give each case two bacterial doses of one million at an interval of a month, and the after-treatment depends on the result of the Wassermann test and the progress of the disease. The period of treatment depends on the case.

If an infection is injected early in the disease results indicate

RESULTS

One of the features of some pneumonias is a coughing fit as the patient awakes with a fluid system. If necessary during these coughs, Tracheal Suction may be just necessary at all in these cases.

In the 10 pneumonias the Observation has been positive it is shown that the coughing fit is not due to the water in the Wassermann but to the water in the lungs. In the latter case a tracheal tube is placed in the lungs without recovery and the Wassermann again tested. If the Wassermann still gives a negative result the disease is probably cured.

The evidence that the above method of treatment is satisfactory is borne out by the small number of relapse cases that occur. It remains to be proved by time whether a cure is absolute or only temporary.

I am afraid that this paper has nothing new to offer as to the treatment of syphilis but it is written as the result of experience gained in the venereal wards at Huddersfield, with a view that it may be of some use to the Service and may help to bring about the greatly desired decrease in the total days sickness from this disease.

THE EPIDEMIOLOGICAL EXAMINATION OF CONTACTS WITH CEREBROSPINAL FEVER AND THEIR ISOLATION

By MAJOR THOMAS HENRY C. WELLS, M. A.
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During the recent epidemic of cerebrospinal fever much attention has been directed to the subject of "contacts" of the diseased person of this disease. It may therefore be of interest to have an account of the investigation on this matter, which it has been my privilege to carry out in the laboratory of the Royal Naval Hospital in Plymouth during the past few months.

Spreads (1915) first made their appearance in Plymouth and Devonport towards the end of December, and the first naval case was admitted to hospital on the 22nd of that month, but it was not until February that the epidemic began to assume an alarming aspect. During this month various cases were admitted, all being of a very severe type, no less than seven terminating fatally. In March and April ten cases were admitted, the majority being of milder type with convalescence only. The total number of cases treated in hospital was twenty-seven, with a case mortality of 22 per cent.

In addition to these cases brought from the "unexposed" developed the disease while on short leave at Torquay, and another boy shortly after being drafted to Portsmouth. One of the hospital cases came from the "Agas" and the medical officer (First Surgeon L. Roberts) informed me that the patient had probably contracted the disease while on shore (place not mentioned) some thirteen days before being taken ill.

It will be seen, therefore, that the naval and marine personnel of this port supplied twenty-eight cases in all, not a great number when it is remembered how many men and boys have been under training in the various establishments.

During the early stages of the epidemic it was found impossible to do more than examine the "close-contacts," those being defined as "persons who had slept in close proximity to the patient, or who were in the same room or otherwise brought into close relationship with him."

But later on, as epidemics came kept appearing in the Naval Barracks, it was decided to examine a much wider circle of contacts, including all those who slept in the same room, or were in the same training class as a patient.

THE DISTRIBUTION OF CHINESE CANCERS.

In accordance with orders received from the Director General of these matters, were directed to hospital in Hong Kong the following and upon their accommodation and admission a summary of medical history was obtained.

The first batch of patients numbered fifty-five, from the 'Impegnable,' where two cases of cancer's origin have occurred between February 1904 and 12, twenty-seven of these were found to have malignancy in their own photographs. The remainder after thorough examination were sent back to duty with the exception of fourteen boys who having more or less severe intestinal afflictions, were regarded with suspicion and retained for further observation. A second examination of these boys resulted in seven cancers, bringing the total number of the batch up to thirty-one.

Of these detected cancers, two have subsequently developed cancer's spinal lines, one on the third the other on the twelfth day after admission to hospital, these two cases proving to be the only two instances of cancers who have developed the disease in the whole series and in accordance thereto both have made an excellent and speedy recovery although the first and only complaint was made in both cases. A further batch of twenty-five boys was admitted on February 22, being comprised with the ones reported as having cancer in the process of recovery, on that date at Hongkong. Amongst these nine cancers, none found.

The 'Nardithamale' have supplied three cases, and being on duty contacts were admitted to hospital, fourteen of whom were found to be cancers. The 'Lionie' Training Establishment supplied three cases, and having two contacts on duty three further of these proving to be cancers. (It is to be noted that the establishment is part of the 'Fort of Victoria').

The 'Ming Yuen' had three cases, thirty-two contacts were admitted to hospital, none proving to be cancers. Here the barracks were on duty with sleeping billets for about a dozen were hence the subjects of contacts involved about nine samples during the number of the cases in which the cases occurred. The 'Indon' and 'Ponahat' had two cases each, sixteen contacts were sent to hospital from the former ship, and thirteen from the latter.

The barracks were, however, immediately reporting large batches of contacts, as was done by the 'Impegnable' the 'Ponahat' and 'Ming Hamale' as well brought out. Thus, the form of infection in the 'Impegnable' must be considered to have been

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violent, but soon subsided, with a very hot day on Tuesday 18th. From around 10 o'clock onwards, it began to blow, but brought also in rain, so naturally the epidemic would not have been checked in a large concentration of the land. However, when the arrival of the epidemic stopped it was not arrested until April 4 when a night and morning rain set in, which after 48 hours after having stopped in Portsmouth and it is difficult whether this had any connection with the previous outbreak in the Medical Officer of the Hospital (Dr. J. H. J. Smith, M.D.) informed me that this day, only passed the 5th anniversary now month after the first case had died at Torquay.

In the Marine Barracks and in the "Powerful" there were no further cases after the contacts had been segregated. On the other hand in the Naval Barracks including the Youth Training Estate included, where the difficulty of selecting contacts is great owing to the non-permanence of the sleeping billets, and the large size of the marine epidemic cases kept cropping up at irregular intervals.

THE EXAMINATION OF OTHER CONTACTS

This was commenced on the middle of April, and was continued until it was thought that practically all possible contacts in the Naval Depot had been examined. Whenever a case occurred it was arranged that the contacts should be searched in the laboratory in batches of not more than twenty each day, for example, as before the process being started I used all possible contacts had been worked through it was understood that the original was important of making close contacts direct into hospital should continue to follow.

When the examination was completed the day following the outbreak a notification of the results obtained was made to the Naval Medical Officer of the Depot and the individuals were forth with sent to hospital for the routine isolation and chemotherapy.

Combining the figures of the following two tables it will be seen that a total number of 1,000 individuals were examined, and 167 of these were found to carry the organism, or in other words, a percentage of about 17.

Thus at first sight would appear to be an alarming proportion to be infected but when it is considered how widespread the epidemic and that sleeping billets in the Naval Barracks are of necessity somewhat crowded, I do not think that the results obtained can be called unexpected.

on the top the upper part of the main-plasma can be reached without the aid of a syringe and the rest of the concentration is obtained by centrifuging. It consists of a narrow dish holder enclosed in a length of glass and supported on an elastic angle about an inch in its one end, the other is held in position by means of its flexibility and can be extended from the short arm of the stand to the extent of about an inch.

The resulting living films, the area is withdrawn from the petri and plates are mounted there and then the medium being poured over the surface of the medium with a sterile glass rod. The plates are then put in the incubator at 37 C. for approximately hours at the end of which time they are inspected, fresh cultures being used like previous ones. The practice of living, cell-like films from sheep was only discontinued in 1936 and then, at any rate during the cold weather, the technique of living culture by an open wide, viable seed in the laboratory, in the summer I failed to find the organisms in the, but as a subsequent examination of results taken from the same laboratory in the laboratory, a definite percentage of the results was found to be positive.

In 1936, however, he observed that during a small epidemic, the film used for use during the warmer months of May and June, he found quite possible to obtain growth of the diplo-coccus from its cells on board and brought to the laboratory, even after three hours.

In practice I have not found it possible to eliminate a separate plate from the use, owing to the large number of cells which each cell of the limited incubation space of the deposited plates have themselves been used in some of these under surface with a corresponding loss in the number according to the use of the plate and the corresponding use. This method has been found to be quite satisfactory in being exceptional in finding a contaminated plate. One of the reasons when the stock of plates happened to be all in one stage of use in the lab. have been substituted with equally good results has the method is much more laborious and the tubes only a few drops of medium are used from on the medium.

With regard to culture media I have found Buchner's blood serum medium to be up to the most useful to work with, it is easily made, provides an excellent surface for growing and yields an abundant growth of the microorganisms within twenty four hours, the volume of which are diffusive and easily recognized. Yeasts and a human blood serum medium have also been used but have been discarded because of the uncertainty of being able

to provide a continuous supply of these blood substitutes would tend to human blood, whereas infected blood serum tends to be cleared daily with high metabolic change in the quantity in the storage, the lungs of the Royal Wilkes Yell.

With regard to the identification of the colonies I have found it practicable to do extensive studies on each colony and make them under such as has been recommended but experienced on the microscopic appearance of the colonies on differential medium, and the microscopic examination of the pigmentation caused by Gram's method and use of spaces that after complete facility in recognition has been acquired the central test is not as absolute necessity as may seem the margin of error is small and if anything is on the side of over rather than under estimating the number of carriers, a matter of some importance in view of the fact that the investigation is undertaken for the purpose of identifying and segregating all carriers and thus preventing the spread of the disease.

THE TREATMENT OF CARRIERS

As has been stated above all the "acute" carriers in the number of 110 were segregated at the hospital together with the necessary four carriers detected amongst the remote contacts.

In dealing with the "acute" carriers no special examination was made before using any method of disinfection; the infected carriers were segregated from the non-carriers at the earliest possible moment; the latter were then reexamined, and if found to be clear they were then discharged and discharged as a result of the above mentioned simple disinfection with penicillin and iodine.

The carriers were subjected to a course treatment with a view to getting rid of the organisms from their excretions. This consisted in nasal disinfection with weak penicillin solution and scrubbing the faeces with glycerine and iodine; other disinfectants such as weak Listerine solution, peroxide of hydrogen, etc., have also been tried but I consider the most satisfactory method to be the above mentioned simple disinfection with penicillin and iodine at least three times daily. Other details, such as disinfection of clothing, towels, etc., have been carefully carried out; moreover, each is provided with a three piece of rag each morning in lieu of a handkerchief; at the same time the whole rig of the patient being day is replaced and turned. The most careful attention has been paid to the sanitation of the wards occupied by carriers and all windows have been kept widely open. The carriers were induced to lie in the strong grounds as much as possible whenever the

rather prominent, and even appeared now in slight, and rather general, "fading" (faded appearance) in the characteristic number of the individuals.

Confinement of these cases to the same place is, not equivalent to confinement of the disease to one, or even to a few, cases. From time to time, new cases, taking the form of "You are very ill, but don't worry, because the simplest work in this hospital is to keep the patients from dying, and that is what we are doing."

Individual confinement has been found to be quite useless as a means of control, but it has been proved very consistent. The following is the result:

1937—			
Feb. 10	March 1	March 10	March 20
April 10	April 10	April 10	May 10
May 10	May 10	May 10	May 10
1938—			
Feb. 10	March 1	March 10	March 20
March 20	April 1	April 10	May 10

There is no, however, evidence, even, of the average length of time for a patient to be kept in hospital. It is here only, about three weeks.

The failure of attempts to control the disease through isolation and separation is, perhaps, one of the most striking facts which have developed the disease.

The isolation and segregation of cases is undoubtedly a valuable method of limiting the spread of the disease, among a large collection of people and in conditions such as shown in barracks, camps or ships. The problem can be dealt with, but as a rule, communication it would be a matter of extreme difficulty, and I am doubtful if it could be even effectively carried out.

It is interesting to note that in the course of the examination of the 1,500 cases I found four apparently healthy individuals who were carriers of the blood-borne factor, as a precautionary measure they were admitted to hospital and were treated by blood transfusion in the same manner as the meningococcal carriers. In conclusion, I desire to express my thanks to the senior medical officers of the various ships and establishments for their constant assistance in sorting out and sending recruits to the hospital for examination, and to the two sick berth stewards (my laboratory assistants), who have worked indefatigably on the preparation of the large quantities of media and apparatus required, and who have been of the greatest assistance in seeing the whole course of the work.

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During the study period, a total of 1000 *Amphispiza bilinearis* (100% *b. b. b.*) have been recorded in the Forest Reserve. The first nesting attempt has been observed in a pair of *b. b. b.* on 15 January 1974. At the end of the study period, on 1 May 1974, there have been 100% nest failures. During this period, but fall primarily in the first group, 14 young were observed during the first months. Between February 15 and February 20 and between March 5 and 10, at the end of the incubation period, only 4 cases were observed, and the young that I observed at regular intervals, between March 20 and May 1, the date of the last case.

There appeared to be some correlation between weather conditions and the number of cases observed – not being more numerous after an abrupt change in the atmospheric conditions, i.e., under conditions favouring the persistence of mesophytophagous insects.

100

[illegible]

There were however, shown round the town by a number of the towns-people who were a friend of the people who had contracted the disease, and the people who were also in daily contact with the two from the next incident. It will be seen that to establish a connection between the Canadian and the Portsmouth epidemic it is necessary to suppose the existence of two persons, neither of whom himself contracted the disease, one a member of the Canadian team, and the other a member of the Eastney team. It is possible therefore, the case, and it is interesting to note that not only did the first case come from the town of Eastney, but that the next serious case in the town occurred among school children attending school in a room used by the Eastney militia. On the other hand the almost simultaneous outbreak of the epidemic on different parts of the country, the weakness of the direct evidence connecting it, and the fact that most of the disease occurred in the coast towns below, makes it more probable that the epidemic was due to sailors, or visiting seamen, and it was attributable to the Portsmouth contingent.

The epidemic was not confined to Eastney: of the 31 cases, 1 came from the Royal Naval Barracks, Portsmouth; 11 from the 1st B. V. Barracks, Eastney, 4 from the 1st B. V. Barracks, Forton, and 1 each from the barracks the 'Vernon, and the 'Fingert'. Of the Forton cases the first two came undoubtedly from East and the third and fourth from houses in the town where there was a small epidemic. No case originated in the barracks themselves. The last case admitted from the Royal Naval Barracks had come from Chichester the day before the illness started.

The majority of the cases were in men under 30 years of age, and it was remarkable how many of them were either boys or recently married men. So few striking is the variation in the mortality dependent on the age of the patient. These two facts are shown in the accompanying Table:—

Age of patient.	Number of cases.	No. operated.	Deaths.	Mortality, per cent.	Average age of patients.
Between 10-20	30	13	1	30	17 $\frac{1}{2}$ years.
Over 20	11	7	8	62	27 $\frac{1}{2}$ years. (including 1 pa- tient aged 55)
Total	41	20	9	52	25 $\frac{1}{2}$ years.

These facts bear out the assumption (usually admitted) that the weakness of the diaphragm (shown) while contracting may result (a) that the respiratory muscles, comprised of the diaphragm and the external, of a well-developed system of accessory intercostal muscles. They also emphasize the need of a diaphragm that is not contenting to ordinary conditions with the diaphragm as a subsidiary aid of respiration. This strongly suggests that one of the pathological causes of infarction is excessive fatigue, but it has not been possible to corroborate this undeniably in more than one of the reported cases. A second possible interpretation is that it is associated with the presence of abnormal and possibly hypertrophic and the consequently increased liability to morphologically infarction. Probably both factors play a part.

CLINICAL HISTORY

In his second of the diaphragm's function, there appear (1) infarction (2) infarction and (3) infarction. In this series one infarction and one infarction are reported, the remainder all fall under type (1). The infarction (1) was typical instance of the most common form which the diaphragm can assume. H—W—, a man aged 54, who was known to have been strongly obliged to alcohol, returned home on the evening of March 7 apparently in good health. At 8 p.m. he suddenly collapsed, and when seen by his family doctor was quite unconscious with a very weak and rapid pulse and apparently unaltered. There had been no complaint of headache or pain at any time, and no vomiting, and there was nothing to indicate the nature of his disease. The following morning he was still completely unconscious, temperature 102.1, pulse 120, respiration 40. His tongue was forced and dry, his face flushed and his breathing irregular of the Cheyne-Stokes type. During the day some sputa were passed in the night time and a petechial rash appeared on the trunk and limbs. A pronounced degree of cerebral spinal fever was made and he was admitted to hospital the same evening. On admission he lay in deep coma, with head and eyes deviated to the right, and deep and superficial reflexes were abolished. Blandberg was Cheyne-Stokes in character. The body was definitely covered with a fine purpura, each which was most marked on the abdomen and arms. Lateral puncture—in which no resistance was offered—produced a red or dusky streaked fluid which contained numerous leucocytes.

* England: * Agitation, Cardiac and Thoracic. In Series 1911.

diagnosis, chiefly around the 30th. When 5 ggs were ingested immediately, but the patient failed to respond and died 25 days later on March 18—death at autopsy after the onset. Before death the neck had developed into a profuse bloody purpura and at the autopsy similar exudations were found along the walls of the stomach and small intestine. There was dark exudate at the base of the lungs, and oedema, which was the entire picture.

The abortion case was referred on April 4, with a history of headache, vomiting and exudate of twenty four hours duration. On admission the patient, I—B—, complained of severe frontal headache and pain in the neck. Temperature 103.4° F. He had rigidity of the neck muscles and hiccups again and there was a moderate erythematous rash on the legs. Lumbar puncture produced turbid fluid which contained a small number of Gram-negative diplococci. Temperature 5 ggs was given intramuscularly. On the following day the temperature was normal and he was much better. The symptoms rapidly subsided, the temperature remained practically normal and within a week recovery was complete.

With these septicaemias all the cases belong to the ordinary form, in which there is typically an acute onset of severe headache, rigidity and vomiting, with rapid alteration of the mental state, death usually in about thirty days. On examination the patient is found to be hypermetabolic, irritable, stupor or in a definitely comatose condition, which may vary from drowsiness to coma. If sufficiently conscious, he complains of severe headache, and possibly of pain in the neck, back, and limbs. There is definite rigidity of the neck muscles and contracture of the hamstringa on flexing the thigh (kneeling sign). The abdominal reflexes may or may not be present, the knee-jerks are usually exaggerated and the plantar responses, if obtained, are always flexor. In a large percentage of the cases a rash was also present in the early stages (see below). The first lumbar puncture, with two exceptions, consistently yielded turbid fluid, usually under some pressure, in which micrococci could be demonstrated. If recoverable these cases gradually improved under treatment with yielding of the symptoms usually after four to seven days. Recrudescence of symptoms after apparent recovery occurred in those cases that clinically recovered, but, as a rule, recrudescence, when it started, progressed slowly but steadily to recovery. The unfavourable cases either proved fatal at some time during the first fortnight (and usually within the first ten days) during the septicaemic stage of the disease or else progressed

in chronic meningitis, a condition in which the epithelial layer seems to be entirely passed and the symptoms are comparable to hydrocephalus. These cases reached the chronic stage which is characterized by stupor, progressing to complete coma with normal temperature, varied by occasional bursts of pyrexia and intermittent vomiting, with pronounced circulatory great rigidity of all muscles and marked local contractions. Two of the patients died in this condition, with symptoms of respiratory failure one after first and the other after ten weeks illness. The third case, an irreversibly comatose for the latter after seven weeks illness, when hope had been practically abandoned, and made a very slow but complete recovery. With these exceptions all the fatal cases died within three weeks of the onset of the disease with the suppurative condition was still pronounced. Death in these cases appeared to be due to a combination of sepsis and hydrocephalus. The respiratory temperature and pulse rate as a rule steadily fell for a short time before death after reaching 100° F. (38° and 100 respectively) the patient became more and more comatose and finally died from respiratory failure. At the autopsy (which conditions could be found around the cord and at the base of the brain extending for a variable distance along the course of the vessels up to the end of the medulla) and the ventricles, pus and gas was frequently found in the lateral ventricles, which were to a greater or less extent dilated. In two cases pus in the pericardium was also found and in two others acute leucitis in the bronchopneumonia. But, as a rule, the thoracic and abdominal viscera were normal.

In contrast to these cases the post mortem examinations of the chronic cases showed the presence of a large quantity of chondrioid material in the dilated basal cisternae in the subarachnoid space of the cord and in the greatly dilated lateral ventricles with large foci of white lymph adhering to the cord and the floor of the brain. There was no sign of any acute suppurative process.

SPECIAL FEATURES OF THE HISTOLOGICAL CONCLUSIONS

(1) The most noticeable feature in this epidemic was the frequency of a rare lymphocyte observed polymorphous nuclei in only 5 per cent. of the cases, and a purpura such as less than 1 per cent. of several hundred cases, and notes that these were always very severe cases. In contrast to this serious case, out of thirty, one of the cases presented a definite purpura such as the early period of the disease. The spots varied in size from pinpoints

c. pusulent, white, a tip out of a temporary piece and appeared on an infected part of the skin, including, in two cases the nose. It was very often itchy and was spreading, but the vesicles quickly became dried and flatter. The cases with bloody noses eventually died, but eight cases out of the whole series recovered. The time span of a very little stage usually not later than the second day, rapidly reaches its maximum and rapidly falls.

(7) Lung lesions, on the other hand, which are declared by biopsy to occur in 10 to 15 per cent of cases in some specimens, were very rare. They were only seen in two cases, both of which histologically appeared as a mild pneumonia, of one part in one on each of two in the other with temporary pain and swelling, cleared up again within a few days.

(8) Paralysis of cranial nerves was also very uncommon. In 1 instance a facial palsy was noticed and in that where a strabismus, all were very transient and never lasted more than twenty-four hours, so that it is possible that the lesions may have been caused in other cases. All the patients with strabismus died.

(9) Optic neuritis was not detected in the few cases which were examined.

(10) One patient in the series developed signs and symptoms of broncho pneumonia. He was an extremely acute case, and died on the fourth day. At the autopsy confluent broncho-pneumonia with a touch of mucus plugging was found, involving the left posterior lobe.

(11) Infection occurred in five cases, three of whom died. In one case it was associated with a bilateral nasal discharge. The patient subsequently recovered, the discharge stopped, and he regained full hearing.

(12) Complications was noted in six cases as an early symptom. In five of these it was a mild acute purulent infection, of no moment, but in the sixth case it was succeeded by bilateral keratitis, iritis cyclitis, and panophthalmitis. The patient recovered, but is left permanently and completely blind. The man was a somewhat remarkable one and deserves a short description:—

A—B—, a big, aged 34, went sick on May 8, complaining of pain in the calves and of sore throat. In the evening he was put under sedation to 10.45 P., he had marked rigidity of the neck with some irritation of the head and a definite Kernig's sign and a fine petechial rash appeared on the back and legs. He was admitted to hospital the same evening where these signs were confirmed, his mental state was unaltered. Lumbar puncture was performed

and clear fluid under an increased pressure with force, which caused stabs or cuts. The following day, the next two investigations (the open survey, as per 1, and the pressure transducer) the way of a throbbing pain, and there were small haemorrhages on both legs. He then complained of no headache, but vomited several times during the day. Lumbar puncture again produced clear fluid. On the 10th his condition was about the same but he had return of headache with some vomiting and also complained of pain in the right elbow joint, and had marked *carpal spasm*. Lumbar puncture fluid was for the third time clear, but a third culture taken on this day proved positive (typical meningococcus being obtained). On May 11 the lumbar puncture fluid was opalescent. Rheumatoid nodules appeared on the feet, and the skinless nipple progressed to gangrenolulcers. His next point is some swollen and painful, but the other symptoms gradually declined and the patient was convalescent human days after the onset. Unfortunately the opalescent fluid changed on the fourth day was mixed and not so much haemolysed, and no further opportunity was afforded of taking meningococcus in the culture, but it would appear that this was a case of meningococcal sepsis with meningitis occurring late in the disease as a subacute feature.

Discussion

When the presence of the epidemic was recognized the diagnosis did not present great difficulty. In a rule, the cases reached hospital within forty-eight hours of their onset, and the later cases frequently not later than twenty-four hours, and there was a definite clinical resemblance between the cases when they were first seen. The diagnosis was always made, as far as possible upon obvious clinical data, and then confirmed at once by lumbar puncture. Inquiries revealed two stages of the infection. (1) The 'asymptomatic stage' due to retention of the klebsiella by the organism, or predominantly a bacteremia which precedes the meningitis, the evidence being that a increased or positive count to retention of the meningitis, but is not open data and as a rule, does not contain any increased number of cells or any organisms. (2) After an interval of hours, or even days, the stage of definite meningitis follows. It is marked on with a violent increase in blood, and general aggravation of the symptoms. In our experience these two stages are by no means easy to differentiate, and although on looking back on the cases it is often possible to make the

detection, it is evidently difficult to arrive at a certain diagnosis in the early stage. In fact, by the time the cases reached hospital they had all reached exceptions passed into the stage of meningitis proper and the final stages of the first pneumonia was definitely ruled. The two exceptions were (a) the case of meningitis mentioned already discussed, (b) one of the later cases, in which a diagnosis was made confidently on admission, and in which the feet were clear and sterile on the puncture, but turned and containing meningococci the next day. In this case there was no aggravation of symptoms on the second day, nor remission after the healing of the puncture in diagnosis early in the second stage. The following features appear to be of importance:—

(1) *Acute onset of severe headache, pain in the neck and back, and pyrexia with repeated vomiting independent of food occurring in a patient previously in full health.*

(2) *The mental state.* This is a most striking feature and to us the most important. In only five cases could it be described as normal when the patient was first seen; there were all instances occurring towards the end of the epidemic. In all the other cases the mental state was distinctly abnormal. The confusion varied very considerably, some patients were drowsy and apathetic others showed cerebral irritation, lying curled up and vomiting all interference and being hyperirritable others were mildly or distinctly delirious, and in three instances comatose while yet others were so deeply comatose that they failed to react to head puncture. But whatever the change, it was always very definite and therefore a very good diagnostic value.

(3) *Severe headache* was mentioned by all these patients who were sufficiently conscious to answer questions. The pain appears to be sometimes more intense in the occipital sometimes in the frontal region while frequently it is an intense generalized pain felt all through the head.

(4) *Stiffness of neck* muscle is of equal importance, and was noticed in every case except two, which were classified as meningitis alone. There was definite head retraction at the onset but usually that if it occurred, only developed later. There was always pain and stiffness in attempting to flex or rotate the head.

(5) *Artery's sign* means pain pains with rigidity of the neck, and is of similar importance. It occurred in every case in which there was rigidity of the neck. In one or two of the more acute cases there was a spasm of all the back muscles, the patient lying on his side with all his large joints semi-flexed.

(6) Pyrexia of the lungs was moderate.

(7) *Streptococcus*? entered well from throat, regions of haemolysis and nasal discharge was frequent, but only marked in the upper acute cases occurring early in its epidemic. Its absence is of no importance in forming a negative diagnosis.

(8) The tongue was unusually dry and sharply bordered, and the breath foul.

(9) Cough when present, was of very great diagnostic value, as mentioned above pyrexia rather occurred in 65 per cent. of the cases and in two of the later cases this, were the one important sign on which the diagnosis was made. On the other hand their absence is of no importance.

(10) *Rhinos* tubaria, usually very pronounced occurred in 75 per cent. of the cases. It is of some diagnostic importance in conjunction with the other symptoms.

When a diagnosis had been provisionally made upon clinical data, it was regularly confirmed by bronchic puncture followed by macroscopic examination of the fluid. This is the only correct method of diagnosing the condition from other forms of acute necropsis. The first case seen was not so confirmed, but the clinical features leave no little room for doubt that it has been undoubtedly included in the series. P—H— was taken suddenly ill on January 17, with severe headache pyrexia (100.5° F.), and delirium. On admission to hospital twenty-four hours later he was unconscious, but very violent when roused. There was some costal rigidity, and *rhinos* tubaria, but breathing was unimpeded, of the Cheyne-Stokes variety. No physical signs of disease were found in the chest or abdomen. The patient was still delirious, the next day had considerably better and slowly improved, but for a fortnight he had severe frontal headache.

With the exception the diagnosis was confirmed in the laboratory in every case.

DIAGNOSTIC DIAGNOSIS

During the epidemic a diagnosis of cerebrospinal fever was provisionally made in six cases which bronchic puncture proved to be mistaken. Three of these subsequently developed signs of pneumonia, or broncho-pneumonia. These three cases closely resembled necropsis at their onset, the others starting abruptly with severe headache pain in the neck and back and pyrexia. All of these had rigidity of the neck muscles and pronounced mental change and one had a definite Kernig sign, while in none

did the deliriousness (manifest throughout the second or third day of the disease). The clinical diagnosis by localizing signs was of at least three degrees: equal in no two of the three the patient was judged to equal. The three cases presented much the same line of events. First, Pritikin had a pronounced herring sign and rigidity of the arms, and all three across haddock and pyrexia. On the third day, however, at different times. The haddock and pyrexia persisted for some time, but the symptoms gradually subsided, and the patients, as well without developing signs of any definite disease. It is possible that any or all of the three may have been mild cases of meningitis, which were tapped during the 'meningeal herring' sign. Before the meningitis developed, there is no proof of this, and they must, therefore be observed as cases of confusion with meningitis.

It is probable that at any other time, all three cases would have occupied haddock positions. During an epidemic it was natural that the symptoms of meningitis should have arisen, and the symptoms (complex of across haddock and pyrexia of sudden onset with definite change in the mental state, rigidity of the neck muscles, and herring's sign in one arm) started at such a time the performance of the slight operations, which is as it was dangerous and is of great importance in establishing a diagnosis.

The other principal condition which explains the disease was meningitis occurring in typhoid fever and gastroenteritis, and other forms of meningitis, but examples of them have not come within our experience.

LABORATORY DIAGNOSIS

Smears were made from the spinal fluid in every case, and stained by Gram's method. There was considerable variation in the number of organisms found. In some cases many diplococci could be seen in every field under one-twelfth objective, both stained and unstained. In others a prolonged search was necessary, before any organisms were found, but in every positive case, some indisputable forms negative diplococci were seen. It was found that the number of organisms seen did not form an entirely reliable guide as to the severity of the case. Thus in one case the fluid obtained on the first day contained a very large number of organisms—so many so were even more—the majority of which were *staphylococcus*, yet the patient made a very rapid recovery. On the other hand, in some of the more rapidly fatal cases several in 100 had to be examined before any organisms could be seen.

The first attempts were made to incubate eggs a drop of the fresh fluid of these were exposed to dust and allowed to settle for a few hours and a second run is made from the liquid on. It was not found necessary to sterilize the fluid before incubation.

The first attempts at obtaining cultures were not successful owing to an undue appreciation of the lack of resistance of the organisms to cold. The fluids were collected at the bedside, taken to the laboratory and then incubated, and in some cases on linen or more clothed before the cultures were made. A change of method was subsequently adopted. Culture tubes were taken to the ward and the first few drops of the fluid allowed to run down from the needle into the tubes which were then incubated at once. The results were most satisfactory, and out of numerous cases examined only two failed to give positive cultures of the meningococcus. One of these was a mild case in which very few organisms could be found in the smear, and the other was situated on the seventh day of the disease. The medium used in every case was freshly made bloodagar, which proved very satisfactory. Glucose media, agar and agarose were not used owing to the difficulty of obtaining results first of the time, two to five drops of the fluid were sufficient to give a readily distinguishable growth. Consequently, one of the fluid before inoculating the tubes was not found necessary and was avoided on account of the danger of contamination. In very mild cases or in cases tapped late in the disease it is probably advisable but in our opinion rapid incubation is of very much more importance and the contamination of the fluid is then not required. The cultures in growth were found to have the very characteristic appearance that is described in textbooks of bacteriology, and they could be diagnosed from the gross morphology, but they were always confirmed by staining smears by Gram's method.

The action of the cultures on glucose, mannose, and saccharose was tested in some cases. Eight fermented glucose and mannite but not saccharose; the ninth fermented saccharose in addition.

A second method of culture was accidentally discovered in the course of the work namely auto-culture of the spinal fluid. It consisted in a sterile tube which will warm the organism was found in several cases to grow vigorously both inside and outside the tube, and smears made twenty-four to forty-eight hours later were found to be heavily crowded with meningococci. After forty-eight to seventy-two hours the organisms rapidly multiplied and in a very short time at the end of this time no organisms could be

concluded. The same reason that we cannot, at present, state that growth has a sharp onset, and therefore it would not seem to be a reliable method in itself, but when it is combined the other observed a very striking

With regard to the period of the disease during which the organisms can be cultured, considerable variation was met with. The first fatal cases of disease contained live organisms. In the cases that rapidly recovered the fluid was found sterile after a few days, but in one case which recovered very slowly a culture was obtained fourteen days after the onset. In the later fatal group it appeared to doubt the fluid contained live organisms throughout in those which passed into the chronic stage, and subsequently shed a transient sterile usually after the first week or ten days. The disappearance of the organisms in the fluid cannot, therefore, be taken to mean that the disease is cured.

Blood cultures were taken in three cases in the acute stage, and in two proved positive. The latter of these was taken from the case of meningococcemia already referred to, and was made by inoculating 1 c.c. of blood from a venous sinus into 10 c.c. of Pepton saline containing peptone agar thus forming blood-agar plates. Red and green colonies respectively were found on the plates tested; it is below, later, which on sub-culture proved to be pure cultures of meningococci.

In all cultures of the meningococcus were obtained from twenty-two out of the thirty-one cases, and the organisms were demonstrated in the cerebro-spinal fluid in thirty cases.

Meningitis Arterialis

Post-mortem examinations were held on twelve of the fatal cases. The acute phases of the acute and chronic stages of the disease have been described above. No evidence was obtained in any case of infection of the middle meninges of the ethmoidal region. In the last six cases the ethmoidal sinuses were examined and in four of them the pus was found on either one or both sides. The striking feature of these cases was that the pus was strictly localized to the ethmoidal sinuses, and was not found in the ethmoidal region or the nasal passages. The sinuses appeared to be shut off from the nasal cavity. In one case a *Gram-negative diplococcus* corresponded in gross and minute morphology and in sugar reactions to the meningococcus was isolated from the pus, but it grew at 22° C. and therefore cannot be classified as the meningococcus itself. In this case the long wall of the sinuses was apparently inflamed,

supporting endostegolites. In view of the numerous observations confirming the impossibility of hatching in *U. vivax*,¹ it is interesting to know whether it may rise in some cases, by first spreading through the lymph channels of the body into the primary focus, and so into the meninges. It is interesting in this connection that Wernicke² stated in 1894 that meningitis occurs constant in the hypophyseal region, and that he found it present in all cases examined but spherical infections.

TREATMENT

(1) Hypertonic sodium phosphate was practiced as a routine treatment. In some of the earlier and more severe cases phosphate was given as often as twice or twenty-five times, for the relief of hypotonic pressure phenomena, but in the majority it was given once a day for the first four or five days, and after that at less frequent intervals according to the symptoms and progress of the patient. As much fluid as possible was allowed as soon as any at each puncture, severe headache occurring during the operation being the only indication for removing the needle before the fluid stopped flowing. As much as 70 cc. was occasionally withdrawn. No anesthetic symptoms resulted in any case.

(2) Serum treatment. Twelve of the first thirteen patients were treated with Burroughs and Wellcome's antineurospinal serum, four recovered and eight died. Three of these patients also received injections of Meltzer's serum, when the supply of Burroughs and Wellcome's was exhausted. The warmed serum was injected slowly into the spinal canal through a syringe and up to 50 cc. was given at a time, serum pain in the head and legs being taken as an indication to stop. On one occasion symptoms of low-back pressure developed during an injection and the patient suddenly stopped breathing. The fluid was at once allowed to run out, and atropine was given hypodermically, and the animal respiratory rhythm restored. The injections were usually repeated daily during the first three or four days, and after that less frequently according to the symptoms. Four cases were treated with Meltzer's serum only, of these two recovered and two died.

These results were so disappointing, and differed so strikingly from those revealed by Flourens, Rich, Séguinot, and other observers, that in the latter half of the epidemic serum treatment was almost abandoned. In only one case did a critical fall of temperature follow

¹ Wilson and Brown *Journal* 1927, vol. 1, p. 1079.

² Wernicke *Zeits. f. klin. Med.* 1894, v. p. 447.

to inject a 100 cc. intravenous preparation in the symptoms. The patient, F.—L.—, a boy, aged 15, was admitted on the second day of his disease. Rash-like punctures produced clear fluid. The following day the fluid was turbid and the day after that, on the fourth day of his disease, he was given 33 cc. of Mallory's serum. His temperature fell rapidly from 102° F. to 98° F. during the next 24 hours and remained steadily about the normal level, all the symptoms showing corresponding improvement. With this exception, no case can be pointed to in which more than temporary improvement followed the injection. This lack of permanent improvement was experienced by other observers during this epidemic and is perhaps explained by the supposition that the exposure was at a different season so that responsible for the recent American epidemic.

On the 17th of the latter half of the epidemic season was employed at Princeton, as recommended by G. C. Low.¹ Two of the cases also had a dose of Mallory's serum. Of these 12, 15 recovered and 1 died. The drug was given by intramuscular injection into the P. i. M. and the dose employed was 7 gr. on the first and second day, followed by 7 gr. a few days later, while in some cases further doses were given at intervals according to the symptoms. The largest quantity in all administered to any patient was 22 gr. and the average quantity 14 gr. No toxic effects were observed. The figures in this small group, however, with those of serum test, must suggest that the drug is of some value. But it was only used in the latter half of the epidemic, when the severity of the disease had markedly declined and the figures therefore form no criterion of the comparative value of the two methods of treatment. No direct improvement in the symptoms was observed following the injection that could not be attributed to the lessening punctures which was practiced at the same time. Our opinion is that Hasting's and Williams's serum did no harm and that Mallory's serum and serum did little if any good. We relied more upon repeated lumbar puncture than upon any other form of treatment.

(4) The next symptomatic treatment was employed the local anesthetic, and cocaine, which here each marked decline of the disease. Morphine was only rarely resorted to, as we judged that it has a very important effect upon the respiratory center and therefore and should use the solution cautiously and. Ureteritis was given in several of the early cases, but seemed to have no effect.

¹ Low, *Brit. Med. Assoc. Bull.* vol. 9, p. 378.

Discussion

Of the nine cases of epiglottitis reported and recorded, a majority of 12 patients. The general clinical picture of the various of the disease and of the comparative efficacy of treatment, but it is strikingly satisfactory that with one exception, all the patients, who showed symptoms of epiglottitis, and either have already returned to their normal health or are. The exception was the case already referred to in which the symptoms led to complete blindness. No other unusual symptoms have been observed and even blindness, although often prolonged, has been complete without other signs of permanent disability of any kind.

The severity of the epiglottitis, decreased markedly in the later stages. This was evident from a study of the intensity of the symptoms and was supported by the fact that out of the first 12 cases, 4 recovered and 3 died while out of the last 10 cases 6 recovered and only 2 died.

We are greatly indebted to H. D. Raftery, for his constant assistance in the treatment of the cases, and for his advice in the preparation of this paper, and to Miss Margaret J. S. Duffing for her help in the bacteriological work.

transform, or stylized, or brought more gradually in contact with the patient. A man may receive a direct sharp blow over the back and that blow may kill him by cardiac inhibition, or he may



FIG. 1. The effects of a blow on the head. A, blow to the forehead; B, blow to the temple; C, blow to the back of the head; D, blow to the side of the head; E, blow to the chin. The diagrams illustrate the various parts of the head which may be struck and the effects of such blows.



FIG. 2. Diagrams illustrating the effects of a blow on the head. A, blow to the forehead; B, blow to the temple; C, blow to the back of the head; D, blow to the side of the head; E, blow to the chin.

receive a powerful push over the back like any other man or woman who is the major part of the body, and if he is hit on the one side he may move in the other direction. Or again a man

and a most rapid and complete division in such a time, every morning, at 10:30, his face and neck turned purple himself, with the result that within five minutes his watch is a hot coal, and he has to take it to the first hundred yards or so, before the train reaches the next station he has collapsed and is dead—he has got just that little extra strain on the heart that it could not stand.

The extra applied is ethyl chloride administration—in the case of the closed method the patient is knocked into a stage of unconsciousness, on the other he is pushed into it. In the latter case the strain is thrown on the heart.



Fig. 1. A patient in a state of unconsciousness, after the administration of ethyl chloride, lying on the ground, with arms outstretched.

Narcosis induced with such stuff is not what I am talking of in the above, this is just the reverse. In the open method of general anesthesia is a little thing, it is ethyl chloride. I am speaking, not of those cases in which ether anesthesia is either ethically or good in a closed chamber. By the open method that is by the open drop method of administering ethyl chloride, the thing as I think, quite as safe as anesthesia in fact, during the past five or six years at the Melbourne Dental Hospital upon ethyl chloride by the drop method is always given to young children in chronic patients. The average number of general anesthesia administered at the Melbourne Dental Hospital is down on 1000 per annum in the last return, which is about twelve months old—over 21,000 general anesthesia have been administered in seven and a half years. Of this number nearly 10,000 were either ethyl

which commences about noon. There is an acute pain in the chest, at the sternum, which is relieved by lying on the left side.

In this hospital many patients have previously shown an anasarca at both extremities and especially at



Fig. 1. Examination of the patient's neck. The patient is lying on the left side, and the examiner is standing at the right.

and in connection with oxygen and at a low rate that tend upon anasarca or edema. The anasarca is relieved and the patient is brought up to the dorsal line and as the final remedy of cases by Daniel Webster. In the Webster's Hospital the Hospital upon edema should be the deep method of relief.

entirely for all practical and iustitutory doses (and effects) have been obtained.

Though I have much to say in favor of open and plain open administration of ethyl chloride and bromoform, it must be distinctly understood that I am strongly opposed to the closed method of ethyl chloride administration. If an administrator



Fig. 1.—Closed and open administration.

uses a closed method, which personally I think quite unpractical and unnecessary, then he should use carelessness as performed in pure ethyl chloride. Bromoform is not quite as pleasant a drug, I take in pure ethyl chloride but it is far from being unpleasant if properly administered. I would strongly advise any anesthetist to use any the drug in himself, not to take the non-open method,

applied into a very hot steam bath, a rubber catheter—drawn to the point quite considerably in its diameter—and then is gradually drawn over the anastoma. He will then experience what a difference there is between closing the anastoma gradually and closing it suddenly. In one case the sensation is not unpleasant, in fact



FIG. 1. (From the original work of Montgomery.) A patient with a large anastoma, who had been operated on for a long time, is shown in the photograph. The anastoma is a large, open, and it is shown in the photograph. The anastoma is a large, open, and it is shown in the photograph.

almost as pleasant as sitting back and resting. There is, however, slightly more trouble about anastomosis.

I always believe in encouraging a patient to take an anesthetic before he is permitted to attempt the case, for the first time. I am now speaking especially of anastomosis or atropine chloride. He will then know how uncomfortable it is if the anesthetic is rushed on

the patient. The administrator should take from these quarters to the machine to close over the nozzle but even then it is better to leave the valve open to a very small extent, viz. about $\frac{1}{16}$ inch. The nozzle has a diameter of about $\frac{1}{4}$ inch, and when administering I gently close over the first third of the air



FIG. 10. The author, administering the mask. The administrator, according to experience, is somewhat guided by the following observations: (1) a visible inflation of the chest; (2) a visible rise in the thoracic wall; (3) a visible rise in the abdominal wall.

of the air while applying the apparatus, the other two-thirds is delivered much more slowly and if there is any sign of hyperinflation as it is immediately opened up again. Enlarged respiratory passages, a forced rib cage and the mouthpiece is pushed up against the mouth.

By watching the respiration the reader may have an idea of the quantity of

as indicated, followed for the very simple open method, the following notes are given:—

February 24, 1915. H.M.A.S. "Australia." Time, 2.15 p.m. Heavy snow on ground. Temperatures of operating theatre 40° F. Patient, aged 25, strong, athletic build, moderate reaction, not toxicoidale. Patient given 1 gr. morphine and $\frac{1}{16}$ gr. atropine at 1 p.m. The custom of giving the main dose of morphine and atropine about three quarters to one hour before operation is almost universal throughout Australia and applies equally to the big hospitals in Victoria. I never encountered a larger dose than 1 gr.



FIG. 1. The operating theatre of the H.M.A.S. "Australia," showing the position of the patient, the anaesthetist, the surgeon, and the assistant. The patient is lying on the operating table, and the anaesthetist is standing at the head of the table. The surgeon and assistant are standing at the foot of the table. The operating table is covered with a white cloth, and the patient is lying on it. The anaesthetist is holding a bottle of morphine, and the surgeon is holding a bottle of atropine. The assistant is holding a bottle of ether. The operating theatre is dimly lit, and the patient is lying on the operating table. The anaesthetist is standing at the head of the table, and the surgeon and assistant are standing at the foot of the table. The operating table is covered with a white cloth, and the patient is lying on it. The anaesthetist is holding a bottle of morphine, and the surgeon is holding a bottle of atropine. The assistant is holding a bottle of ether.

morphine and $\frac{1}{16}$ gr. atropine at 1 p.m. patient 15 minutes before as for anyone in pain. In the right hand is the anaesthetist, the safety of whom being an anæsthetic. I never saw a temperature of very short duration in which the patient was not in the anaesthetist, and I have done a considerable amount.

14 years—8 years	2 gr. morphine and 1/16 gr. atropine
8 years—15 years	1/2 gr. morphine and 1/32 gr. atropine
12 years to top age	1 gr. morphine and 1/16 gr. atropine

and use the table as a guide to the operation.

The purpose of this note is to set out some of the advantages of the use of the 10% test drop.

Operation.—*Leucostomus xanthurus* is fully anaesthetized commencing at 9.15 p.m. Anaesthesia and effect is by the drop method, followed by chloroform (CHCl₃), and ethyl chloride work well together, in fact Hartridge and Williams' chloroform contains



FIG. 1.—The Yarrow test. A man using the Yarrow test. Head and shoulders raised as noted in animal at home. Under anaesthesia it falls.

a small percentage of ethyl chloride, to improve this, and this followed by open ether on Murray's rack of one layer of fused. Patient fully anaesthetized and ready for operation at 9.15 p.m. in three minutes from start of anaesthetic administration. Temperature with rectum at 3.18 p.m. Patient gave no trouble going under. Head and shoulders were kept square during collection and throughout operation at angle of 45°. A patient will take up anaesthetic for

most easily, but usually with the head and shoulders raised to a certain angle from the horizontal and to the full extent the neck. For all cases of vertigo and giddiness, *forced and shuddering* is all that is needed, the highest position the neck can reach for. After all, as time is passing the patient will not only grow uncomfortable but the patient and assistant both will have to have tired



FIG. 4. Man's hands as guides to the patient's head, lying up the table, the head being supported with a cushion. (Should never be a *forced* position, but should hold head as long as it is raised.)

ing out with the feet out—that was certainly the best of position for *shaking* or *working*. The man who must not tolerate elevation of his patient's head and shoulders when administering an anesthetic has everything to fall back upon should his patient collapse. He will also be able to maintain an easy position with his shoulders when the man who is working on a patient with a

all of all lights is as the eyes when the patient is anesthetized is a great gain. It leaves the operator at all times prepared to keep the patient under, especially in those cases which have had morphine and atropine before operation. It enables the surgeon to carry out a serious operation such as the removal of a tumor and clearing out the sinuses with the consumption of a minimum amount of anesthetic, which is a distinct gain to the patient and favors a more rapid convalescence.

Personally, I never see my patients open when eyes under an anesthetic, but retain carefully the breathing and read the circulation by watching the lobes of one ear.

Patient begins to react when emerging from anesthetic; but on raising head and shoulders to an angle of about 75° nothing stopped the postoperative vomiting. This stopping of post-anesthetic vomiting by raising the head and to extreme elevation has been noticed by many observers and postoperative vomiting can very often be stopped by placing the patient in the Fowler position after returning from the operating theatre.

In no instance do I permit my patients to be placed back on bed after operation with the head low. The head and shoulders are always kept raised about 4 inches above the level of the feet. In many cases the head end of the bed is raised up on blocks about 18 inches high. The almost entire absence of post-operative vomiting is largely due, in my own opinion, to this system and also to the fact that every means possible is taken to lessen the amount of anesthetic consumed by the patient such as the preliminary injection of morphine and atropine, extreme elevation of head and shoulders, and bandaging the eyes when patient is under.

Morphine in some rare instances has a tendency to increase post-operative vomiting, but this is very rare indeed with the small dose of morphine administered. I do not ever remember using it in a male case, though two or three instances in women females have come under my own observation.

In cases of extreme shock requiring immediate operation I give morphine and $\frac{1}{16}$ to $\frac{1}{8}$ of atropine prior within ten minutes of commencing the administration of an anesthetic, it is a distinct advantage, the anesthetic being given during the unconscious stage of morphine. Morphine, like alcohol is stimulating, sedative, hypnotic, according to the time when given and the dose.

I am deeply indebted to Professor A. Robinson of Edinburgh University, for the facilities he gave me so that the photographs illustrating this article might be successfully obtained.

LEAD POISONING

by ARNOLD PHILIP, U. S. BUREAU OF CHEMISTRY, WASHINGTON, D. C.

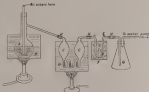
From 1912 and 1913 I made a large number of experiments (a) to determine whether volatile lead compounds are formed during the drying of lead paints. The experiments were performed as follows: Different kinds of paints with varying amounts of impurities and oils were employed—air was blown through (1) a box already the interior of which had just been coated with the paint to be tested, and then air then passed over a vessel containing a solution of potassium sulphide (or sulphurated hydrogen water) which was used as a detector, the black sulphide of lead to be formed acting as an index of the presence of lead. (2) Air was also blown by means of an electric bellows through lead paints and "fuming" and then on into the sulphide solution. The process was kept up for many hours, but with negative results. I thought it possible that the negative result might be due to the formation of volatile compounds of lead and turpentine, etc., which were perhaps washable in water. I therefore proceeded to pass the paint containing taken air through water and for many hours, and then tested the need for the presence of lead without success—no trace of lead was detected. In one or two of my earliest experiments I detected a very slight discoloration of the sulphide solution which made me think that a trace of lead could be present, but this may have been due to poisoning at some time in the process, for on repeating the experiments many times I almost always obtained the same negative results. These experiments, although carefully carried out, were somewhat rough, and I was anxious to improve upon them.

For want of more and apparatus on hand I was unable to carry out a more elaborate experiment to support the conclusions at which I had arrived, so I asked Mr. Arnold Philip (formerly Chemist) to help me. I prepared a sample of turpentine by filtering my white lead "fuming" through a Dacaloid filter media using an air pump to force the fluid through the filter, the filtrate was collected and constituted the sample for examination. Suitable apparatus was got together, and I was to have been present when the experiment was carried out, but this not being possible Mr. Philip sent me the details of the investigation which I give below. The result of this test confirmed the opinion already formed that no appreciable amount of lead is present in a volatile form when lead paint is dried in the atmosphere.

10. Liquid Phleg water as follows:—

—The lead tests upon the sample of tarpetone, which you sent me for examination for the presence of lead have only entirely been completed, and the results of my tests show that it contains no trace of a volatile lead compound.

¹ The tests which I have carried out on this tarpetone sample are as follows. The sample as received weighed 15.58 gram., and was placed in a glass flask A (see sketch) and heated by means of a surrounding bath of boiling water, as was cooled through



Sketch of apparatus used in testing for presence of volatile lead compounds in tarpetone which had been previously heated in its white lead. A. Glass flask in which was a bit of tube. B. Water bath at temperature of 150° F. C. Glass flask containing strong nitric acid. D. Water bath at temperature of about 120° F. E. Glass U tube. F. Section of tube of copper with concentrated U tube. G. Flask from which an evolution of gas is made. The water used in pump is not shown. H. Vacuum rubber tube plate. This rubber is black rubber and contains no mineral matter and no trace of lead.

this heated tarpetone by means of a water pump at the rate of about 3.5 litres per hour and the air carrying the vapors of the tarpetone with it was passed through Mohr's absorption bottle¹ C, containing concentrated nitric acid which was maintained at a temperature of about 120° F. by a surrounding hot water bath. D. The gas, after passing through the heated nitric acid containing of an nitric acid vapor and tarpetone oxidation products, was next passed through U tube F, which was cooled to a low

temperature 15 mm. of a surrounding bath of oil (melting -2°). Here the condensation of all vapours capable of condensation at this low temperature took place. The stream of air was a slow one (about 1-2 l./44-5 per second) and at the end of ninety minutes only 41 gms. of the hot turpentine had been volatilized, that is, less than 12 per cent. of the weight of turpentine originally taken.

"It was considered that if any volatile lead compound existed in the turpentine which was capable of passing into the air by evaporation at ordinary atmospheric temperatures, it must have been volatilized into the air stream in the first 12 per cent. of the turpentine. But when these products are passed through strong hot water and it is to be anticipated that they will be oxidized and the lead dissolved, whilst any lead compound or other volatilized turpentine products, whether acted upon or not by the hot water, and which were not retained in the water, would all be condensed in passing slowly through the tube cooled to about 5° F., by an ice and salt mixture.

"Hence if any lead had been volatilized from the turpentine, it was to be found in either the water used contained in the Mohr's absorption bottle or condensed in the low temperature 'U' tube or in both.

"The contents both of the bottle 'D' and the 'U' tube 'E' were therefore transferred to a platinum basin, and with the necessary precautions were evaporated down to dryness on the water bath. The precipitate thus obtained was treated with a further quantity of strong fuming nitric acid and again evaporated to dryness.

"The residue was to dryness with fuming nitric acid was repeated three times, and was intended to secure that any organic matter present should be oxidized as far as possible. After the completion of this three repeated operations the final residue was gently ignited to a carbonaceous mass at the lowest possible temperature and the residue and ash was treated with acetic acid to extract lead from the carbonaceous residue.

"The acetic acid was then filtered off from carbon and tested for lead by the addition of kindly prepared sulphomethyl hydrogen water. No trace of darkening in colour of the solution was observed, thus demonstrating the absence of lead in this solution.

"The carbonaceous residue on the filter was then gently ignited until the carbon was all converted in the platinum basin, and the basin and any residue was treated with acetic acid, water added and the solution tested with E.D. water. Again no darkening

of which are visible, and it is therefore concluded that no volatile lead compound was evolved from the turpentine by a stream of air passing through it at 212° F.

[Note.—Before this experiment was carried out the flask used was examined for lead, and a very small percentage of lead detected, viz., 0.016 per cent. on 55.1 grams taken.]

The experiment was carried out by comparison of the turpentine at 212° F. and my own experiments at ordinary room temperature: it was therefore thought advisable to repeat the experiments at ordinary room temperature, for otherwise an objection might be raised that although the experiments may be held to demonstrate that volatile turpentine compounds containing lead are not given off into the air at 212° F., yet they may be given off at ordinary temperatures because it may be argued that air at 212° F. causes oxidation of the alleged volatile lead turpentine compound, and that its volatility may thus be destroyed.

The experiment was therefore performed again, at ordinary room temperature, using a similar flask. The following conclusions were drawn from the results of the two experiments:—

(1) "When the turpentine containing the liquid lead compound is distilled at 212° F. in a stream of air the lead compound is either destroyed by oxidation or a volatile non-volatile. In any case it does not evaporate.

(2) "The liquid lead turpentine compound is volatile in air at ordinary temperatures and is present in the vapour formed to the extent of 7 to 14.7 parts of lead by weight per every 100,000 parts by weight of the vapour evaporated from the original turpentine flask."

It seems improbable from a practical point of view that 7 to 14.7 parts of lead per 100,000 parts of turpentine vapour in the air of recently painted compartments could cause symptoms of lead poisoning, for the amount of lead absorbed into the system by a stay of some hours in a space containing a considerable percentage of the vapour could not possibly exceed the amount of lead in, say, a couple of dozen of old pencils used up, or a hundredth part of lead acetate.

The results arrived at by these experiments are in the main similar to those obtained by leading authorities on this subject viz., Daly, Armstrong and Klein in England and Deleens in France.

I believe that lately Sir Thomas Clouston of Dundee, by means of the spectroscope, and Professor Daly of Liverpool by experiments on animals, have come to the conclusion that the

various sources lead paints contain no appreciable quantity of lead, and that the danger is not due to consider carbon monoxide as the fatal oxidation products which cause the symptoms of "paint poisoning," whereas Professor Italy suggests that stibolein cause the mischief.

I very much regret that experiments were being carried on with regard to this subject by Messrs. Miles, Oldersham and Williams, at Liverpool, but having lately read their paper I find that by these experiments we possess the sources of lead in emanations from lead paint is quite sure to be undeniably confirmed. I had often suspected that some symptoms of so-called lead poisoning were not necessarily due to lead but to other substances in the paint along the metal wall, e.g., turpentine and its substitutes—in the form of various kinds of thins and dyes. The general opinion regarding the symptoms from lead painted surfaces has been that those exposed to such emanations were liable to symptoms of true lead poisoning. But now comes more than doubtful. I note Oliver in his work on "Lead Poisoning" (Lecture III), says: "As regards the entrance of lead by the respiratory organs, there is no doubt that people who have slept a few nights in newly painted rooms have suffered from colic. Colic has been experienced by naval officers whose sleeping cabins have been recently painted. To this phenomenon, lead dissolved in a volatile agent, such as turpentine, was attributed part of the colic which met with an honest French man of war!" Now the true colic is undoubtedly due to lead, but I think it much more likely that some cases of so-called lead colic and therefore are due to the oxidation products of turpentine, or turpentine solution, and that the cases of respiratory lead poisoning proper are due to lead dust passing via the mouth and nose, and so becoming absorbed into the system via the respiratory mucous membrane, or being swallowed and absorbed through the stomach. Professor Japanese investigator—has demonstrated experimentally that even when lead is inhaled it enters the body mostly by the gastro-intestinal tract. On the other hand, that few particles of dust reach the lungs is now generally admitted, and that lead dust is capable of being absorbed by the lung is now regarded as rather hazy and doubtful, in their book on "Lead Poisoning and Lead Absorption," write as follows:—

"It has been supposed by some that surfaces painted with lead give off certain emanations containing the metal lead in an organic compound. As the incidence of lead poisoning amongst painters is very high it would seem that the painter is probably exposed to

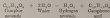
infection, by lead dust, and if an infection organic compound of lead were given off he would be still more liable to lead poisoning."

Experiments were made by Legge and Gossely as follows:

(1) Animals were exposed in a cage, the boards of which had been thickly painted with spent paste; white lead, lead sulphate was sulphate, zinc oxide. The results showed that animals confined in the cage and exposed to thickly painted surfaces were showed signs of poisoning becoming emaciated, and suffering from constant attacks of irritation. Animals exposed in cages in which air was passed over lead sulphate paste, or white lead paste showed no signs of disease although kept in the cage and subjected to the inhalation of any fumes which might be given off for three months. Now by this experiment it seemed clear that whenever disease was produced in the animals exposed to fresh paint they were not suffering from the absorption of lead but of some other compound of which the paste was made. Various constituents of paste were therefore, tried namely the materials from lead or zinc, and heated oil, with turpentine with lead acetate mixed with turpentine. The animal exposed to the turpentine alone very rapidly showed signs of disease, irritation, a tendency to hemorrhoids, strabismus, while the quantity of turpentine present in the cage, we did not exceed 10 mg per liter. The animal exposed to turpentine and lead acetate exhibited few symptoms but the same as lead as the animal exposed to turpentine alone. The animal of animal showed no signs of disease whatever. The animals exposed to the metallic base of the paint, where lead, Zn, showed no signs of poisoning as long as the compound itself was not thrown into the air in the form of dust, but when that was present in the air the animal rapidly showed signs of lead poisoning. Lethemic depression symptoms produced in rats when exposed to the vapors of turpentine (*Archieve for Hygiene* 1899). Similar symptoms were found by Legge and Gossely. They state that pathological examination showed definite disease of the kidney, tubular nephritis, heart muscle atrophy, and heart tending to dilation, and microscopical hemorrhages throughout the course of the organs. No changes of any sort were found in the tissues of the animals exposed to the emulsions given off from white lead paste. By analysis these emulsions were found to contain no lead, but traces of diethylene, hexane and and CO₂.

It follows, therefore, that the effect of turpentine, when added by the painter must be to act as a contributory cause of lead poisoning, and it is interesting to recall the fact that Charred has described just as occurring constantly among painters. That is not

attributed to the vapors of oil. It was shown later, however, by Kungatt, Smithy and Papenough, that the turpentine oil contained no acids, but hydrogen peroxide. According to Kungatt the ultimate products of the slow oxidation of turpentine oil, camphoric acid and hydrogen peroxide, did not react directly. Peroxide of camphor $C_{15}H_{11}O_5$ is first formed, which in the presence of water breaks up into camphoric acid and hydrogen peroxide:—



"Kungatt, however, did not succeed in isolating the hypothetical camphoric peroxide. According to Papenough the water which has stood in contact with the turpentine for a longer period contains hydrogen peroxide, camphoric acid, lonic and acetic acid, and an acid $C_{15}H_{11}O_5$ known as camphoric acid. The oxidized oil is said to contain myricinic acid.

"The accuracy of these investigations has been questioned by no one, and the presence of hydrogen peroxide in oxidized turpentine oil can be definitely assumed. Nevertheless many test-balls contain the statement that old turpentine oil or fact oils in general, contain none. However, however, no acid and hydrogen peroxide decomposes with ether according to the following equation:



the presence of acids is necessarily excluded.

"It has therefore been shown that turpentine oil, which has been oxidized in the presence of moisture contains other substances besides hydrogen peroxide. That has been attributed to the presence of organic peroxides, which decompose with water in far as ultimately to yield hydrogen peroxide. Presumably, peroxide hydrates are formed as intermediate products.

"These investigations demonstrate that when absolutely dry turpentine oil is oxidized, and neither hydrogen peroxide nor acids result. Turpentine oil whether moist or dry, when charged with oxygen, has a capacity to convey the oxygen to each substance as we are directly oxidizable with atmospheric oxygen. It is said that oxidized turpentine oil retains its properties for years if kept in the dark, but little is yet known concerning the oxidation products resulting.

"The presence of the following substances has been definitely ascertained:—

THE EPIDEMIC OF INFLUENZA IN THE ISLAND OF ST. KILDA

By JOHN MACDONALD, M. D., F. R. S. E.

On reaching on Friday, June 20, 1918, the first appearance of influenza was announced by the Local Health Inspector. It is at least 100 years since the island of Arran, in dispatch immediately a cruise of 500 men on the heels of the inhabitants, who were reported to be suffering from "an epidemic of influenza and pneumonia, and an extraordinary kind of vomiting."

There is no telegraphic communication between St. Kilda and mainland, and the news of the condition of the inhabitants in 1848 was received by the captain of a fishing vessel which had happened to visit the island. H. M. S. "Active" was ordered to raise them by means of small boats and proceed as soon as possible.

According to the Local Inspector for the coast of Scotland, the entire population of St. Kilda is 100, and although it may be the Royal Navy is a floating community complete in all respects, the task of dealing with it is, as a number of acute cases among the islanders, the need of equally the medical staff of a small vessel. The war stock of drugs and medical supplies in the house of the post, though a first-aid outfit, is, was therefore drawn upon for the other ships of the squadron and these supplies, such as St. Kilda is now also represented. At 11 a.m. on Saturday the 21st the ship left harbor and proceeded at full speed, 15 knots, to her destination.

St. Kilda is situated on the Atlantic, and is the most westerly of the group of islands known as the Outer Hebrides, the nearest populated district being North Uist, 10 miles to the eastward, while the nearest port on the mainland is Glasgow, 110 miles away.

The island is very small—about 2 miles in length by 1½ miles at its greatest breadth. It is composed of a series of precipitous cliffs the highest being 1,800 ft rising sheer up from the sea, except at one point at the south-east where the land slopes down to the shore and provides the only landing place. It is on this slope that the village is situated.

The village consists of a row of crofters' cottages, a church, a building called the post office, and the house in which lives the Government schoolmaster who also acts as minister. The cottages, with one exception, are all built on the same

place. Each with 8 square with raised felt slope built 8 inches or 10 inches above the landscape, and a third smaller construction about 8 by 8 ft. with 4 ft. or 5 ft. of wall on some cases, or on additional slope. One of the first constructions is used as a kitchen and general living space, the others as high-roofed and garden. The floor, all of concrete, was boarded, and all the ceilings are quite dry; each living is in fact one small kitchen and one fireplace. Sanitation does not exist, the inhabitants collect their refuse and refuse to throw it out behind the village, and so arranged more or less by a bank of mangrove bushes. The water supply is from small streams from the mountain to place but, and before it reaches the village it is quite clean. I saw directly the inhabitants used for lighting purposes, I found out obtained by them from the Indian post. Now however for their use from the mainland is used. That is the only fuel.

Such is the expected position of the island that for eight or nine months in the year—September to June—there is no commercial action possible with the outside world. Even in the summer months the Atlantic coast is at times so good that landing is impossible. A very small portion of the ground is under cultivation, and there is not a trace of cattle on the island, nor is there evidence of any attempt on the part of the inhabitants to cultivate. However is assumed the villages.

The population remains fairly constant almost all year, and some stated to be unknown. I was informed that the idea prevailed that there is a fairly high percentage of illegitimate births, is absolutely correct, only one such birth having occurred in the last twenty-five years.

None of the inhabitants are white, except the schoolmaster who is from the mainland, and one woman, who came recently from another island it follows that they are very closely related. One could expect to find evidence of degeneration as a consequence, so small and so closely interbred, but from a physical point of view it does not appear to be present. I except for a few individuals the men are healthy-looking, not of a very type. The women are of good physique and for the most part distinctly good looking. The children are all pale but appeared to be healthy and have some evidence of white. The older inhabitants speak Guianese only, and as to their a view it is difficult to judge the mental standard, but most of the adults appeared to be intelligent and well up to a peasant standard.

The industry of the island consists of the manufacture of coconuts

method used. The method of random sampling is used, and within these groups, the groups are split, and the method of selection of a sub-group of 100 is used. The method of selection of a sub-group of 100 is used, and the method of selection of a sub-group of 100 is used.

Because the second olive is a biologically superior olive, increasing olive oil use is also the result of the second of three theoretical mechanisms. It has caused the cultural diffusion in the home. So, olive oil preference has been known since WWII, when it replaced the animal product largely used by Americans from before the war. It has been only recently

It has been known, each end of the small harbors of L'Anse au Loup and St. Pierre, the two natural name of the settlements, and the small stream of the village were in sight. Finally the morning, the clouds and I went before and were such as the small space to see that one of whom was Mr. Mackenzie the meteorologist, meteorologist, he is called locally. She returned at 10:00 with the report of the rain, and the rain was collected, but no observations had commenced until after 12:00, and the rain was not.

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100% inclusion at the follow-up among those tested. Indeed, our group of 100% true (and possibly actual) 1% are subjects who escaped the disease were 100% black and unable to render any off-peak high peak difference.

I presented 12 specimens to the referee, and found that the specimens from the pit were, in each instance, as the others found were slightly smaller, if at all possible, but measured almost exactly in equal proportion. One was too young, with 100 teeth on 100 on the side. The young measures three were about 1/10th of the head in size. The smallest was a little more than one year old.

spending considerable time, and in the afternoon, May 1, landed on the shore of the bay, and walked through the mangrove swamps. The water in the bay is very shallow, and the bottom is composed of mud and sand. The water is very muddy, and the bottom is very soft. The water is very muddy, and the bottom is very soft. The water is very muddy, and the bottom is very soft.

In the afternoon, the party went to the beach, and found a large number of birds, including many species of the Laysan group. The birds were very tame, and the party was able to approach them very closely. The birds were very tame, and the party was able to approach them very closely. The birds were very tame, and the party was able to approach them very closely.

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During the day, the party went to the beach, and found a large number of birds, including many species of the Laysan group. The birds were very tame, and the party was able to approach them very closely. The birds were very tame, and the party was able to approach them very closely. The birds were very tame, and the party was able to approach them very closely.

expressed from the fact that the Government is not in a position to do so. The fact that the Government is not in a position to do so is not a sufficient reason for not doing so.

It is a very common mistake to suppose that the Government is not in a position to do so because it is not in a position to do so. The fact that the Government is not in a position to do so is not a sufficient reason for not doing so.

From this statement it follows that the Government is not in a position to do so. The fact that the Government is not in a position to do so is not a sufficient reason for not doing so.

THE IMPORTANCE OF THE HARRIS REPORT

The importance of the Harris Report is not only in the fact that it is a report on the Harris Report, but also in the fact that it is a report on the Harris Report. The fact that the Harris Report is a report on the Harris Report is not a sufficient reason for not doing so.

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German soldiers, the female members of the family property of hams and sausages, much as the Japanese soldier. They appear to have been more than willing to "open to being changed and become to British."

Next to immediate gain and medical men were considered with no value at all, and only a few came with us. Dr. Woodall, surgeon, returned to England in the Japanese State of 1877 as addition to the medical staff, a process and well paid salary for many years. The 1877 was a good quantity of the part of human milk in the diet, and it was by the position of the establishment.

And then, however, the part of the part due to the war in 1877 was 100 per cent. The between then and 1897 a per cent of nearly

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spatially discrete, locally and transiently. When this class of models is used to describe phenomena in nature, there is the potential for two subtle misinterpretations. First, evolution of a population takes place on the spatially continuous landscape.

On the south side of the Bay, the opposite stationing scheme was used, with the first road numbered with negative signs. The stationing of both roads and crossing stations have changed. However, the same highway points have been marked, as is shown in the accompanying figures.

and many other small animal death rate during times of peak, the low numbers of small mammals are probably to be added to maintain a low carrying capacity. Very, and this is especially the case in

with the community. Second, the effect and nature of affecting the group will depend on how those

the "land of the living" with his, located in the Mayan city of Copan, which was utilized for burrowing the early rulers of the kingdom, a good example of the concept of the "divine monarch" (the king as a deity).

For example, one of the University's members of faculty has been appointed to a position in the library, and another has been appointed to a position in the law school. These appointments are a result of the University's commitment to excellence in education and research.

the following two factors: (a) the fact that the number of species is being measured is not the same as the number of species that are being measured, and (b) the fact that the number of species is being measured is not the same as the number of species that are being measured.

(9) In region (1) a bullet wound through the left shoulder, wound entered a hole in the scapula and star shaped fracture of upper end of humerus. (10) A jagged fracture of right humerus. (11) A compound fracture of the upper right tibia. The tibia later was covered by shell and killed. (12) .

The severe left shoulder wounds were admitted from the Transport ship, *Albatross*, within twenty days the men being employed. It should be mentioned that treatment for amputees was received by the landing hospital at Suva Falls.

On March 1, 3 men with splinter shell wounds were received from the *Albatross*. 1. A man's arm having apparently been struck by a shell and complicated fracture history. Two cases may be mentioned. (1) A man with a compound fracture of the humerus underwent the bone was split and cut on the left upper leg, one splinter having penetrated the left cheek fracturing all the inferior teeth, and a compound wound 12 in. long on the right neck, immediately over the jugular vein. In addition there were eight fairly small splinter wounds on the left upper and lower extremities. He, however, was given 36 in. return to the ship on March 14. (2) Sustained a central gunshot wound of left leg.

(3) Splinter both of radius, ulna, scapula of radius and scapula of the arm, the two wounds being developed hemipneumothorax which caused it to be able to give an anastomosis for its removal. He was subsequently discharged to the Royal Naval Hospital, Suva.

On March 4 and 5 12 cases of bullet wounds were received from one having a compound injury to the leg from the *Albatross*.

It is not possible to state the details of each case, but mention may be made of the number of bones affected, penetration of chest parts, neck, chest, abdomen, head and also 3 leg and two 1. back 1 leg and arm 1 jaw. In the 3 bullet wounds of chest there was penetration completely through in 2 cases and slightly in 1 but though none of these were suffering greatly from wound collapse and 1 from haemorrhage deep all returned. In 2 of the 3 abdominal cases there was entrance and exit wounds from one of which the intestine protruded. The abdomen was opened and hand filled with blood but no evidence was too great for anything further to be done. In the other two operations were not possible. They both died early. In the third case there was only a wound of entrance on the right side but marked gas was complained of on the right side knee, and he nearly died from collapse. Subsequently the abdomen was opened owing to the dead gas and by artificial respiration was restored, however, no trace of the bullet was found on post mortem at Suva Falls. Recovery was satisfactory. One of the bullets used was sharp pointed, about 11 in. long and weighed 200 gr.

On March 6 two British officers fell from a considerable height into the sea. One sustained a fractured shoulder and suffered severely from shock which was accompanied by retention of urine requiring catheterization. The other with only minor injuries also suffered from shock.

On March 12, 3 cases were received having been wounded near Suva Falls. A sub-lieutenant who landed on duty sustained a bullet wound the missile entered the left breast and passed out of the left groin just above the left inguinal ligament. At first it was thought that it had

For the first time, the company has a new product line, the first of which is the "Eco" line, which is designed to be more environmentally friendly than the company's previous products. The company is also planning to launch a new line of products in the near future.

These figures are a goodly portion of men. They were obtained by measuring the dimensions and mass of the bodies. We had not arrived at the figures for the 1000 men in 1941, and consequently at a painting of the dimensions of the people. This is a new problem of it is a greater number of people, more men, but probably less than in many places where we are going to. We all agreed we were staying low food than other places. This regard in the dimensions was very important. That was a good thing, being by far the most people.

...as detailed on board, and we made our own ends.

Age Group	Total (%)	Male (%)	Female (%)	Unknown (%)
18-24	12.5	11.8	13.2	12.0
25-34	28.3	27.5	29.1	28.0
35-44	22.1	21.5	22.8	22.0
45-54	18.7	18.2	19.3	18.5
55-64	10.4	10.1	10.7	10.3
65+	7.0	6.9	7.2	7.0

I hope you will be as generous to rely on me in the future as which we are now completely convinced as I cannot give those details with details.

It had been two very early in April when I first noticed I was being followed. The secretary of the High School system was driving. I remember not let my last month or more on board I noticed someone. I had an small sensation of being lost or free.

the animal's body is in a state of arousal. When your loss of appetite and loss of interest in all of life, or even my aluminum bowl (with some) is over, it is time to go to bed. *Wasson (1941)* states that, "Spontaneous recovery of appetite, usually within 24 hours, is the rule." *Wasson (1941)* and *Wasson (1941)* give lists of the various causes of the loss of appetite.

Figure 10, and Figure 11 in Appendix A clearly indicate around the middle of each day. This was not consistently present and about the middle of day, and this may have caused. When I first learned the system, however, in the first week, and in the first 10 days, more frequent.

[illegible][illegible]

(continued)

I was under the Staff Surgeon I think. The board was very comfortable and the two girls had, but no longer I know physical examinations at the hospital and waiting.

I was sent to the Station Hospital at Coblenz, Germany, by British India and stayed on board of the ship for many days. I felt very much better there, but the same was not.

I was in hospital for two weeks for the first time since I had. My appetite was improved, but still, the doctors and rather painful and going on with a very slow improvement. My clothes were washed daily and very much. Treatment in hospital consisted of massage to the legs and backbones, etc.

I was a washed down and had the same. I was in the hospital during the summer months, and I was improved, and at the end of the summer, the same. I was, which I had at the same time of massage and electrical treatment. I was in the hospital for some months, and the same.

The two conditions of deepness are the treatment and length of the left limb finger.

DISCUSSION

In making a case of this condition, as to the etiology of this case is of some interest, however, the same is not.

(1) The condition is not different from that of the other cases, and the same is not.

(2) The condition is not different from that of the other cases.

(3) The condition is not different from that of the other cases, but more than a day or two.

(4) The condition is not different from that of the other cases.

(5) The condition is not different from that of the other cases.

(6) The condition is not different from that of the other cases, but more than a day or two.

(7) Several of the cases were reported and were very much by comparison, and the same is not.

(8) The cases of this condition are not different from that of the other cases, but more than a day or two.

(9) The cases of this condition are not different from that of the other cases, but more than a day or two.

(10) The cases of this condition are not different from that of the other cases, but more than a day or two.

(11) The cases of this condition are not different from that of the other cases, but more than a day or two.

(12) The cases of this condition are not different from that of the other cases, but more than a day or two.

RECEIVED BY THE DIRECTOR, OCTOBER 19, 1966

Dr. Roger Anderson, 1-800-817-1000, 311 West 10th St.

Four almost five-year-old youths had been in the same group and little will be heard of her again and that was a very long time and had quite numerous reforms and there was a long time of complete darkness. They all did exceptionally well and I think some have progressed to apply their treatment to a larger work. In order to find out whether a child is able to do anything, that is, one day before I took the pictures on the same subject. An impression is recorded on that day.

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

In this house and in the nest are everything gone, mainly made by a female when he helped and washed back together. In the night he goes back about two thirds of the way to where the thing was washed and then, a few minutes after that, picks up the whole. This species was known to never lay still on position. The ones were not exposed at a low, near only. Sometimes if others were applied and the birds were then covered with a dressing of hair or wool. The flesh with a little bit had been damaged, and the entire nest slightly less than on the other side. The other a few and more and more were again used.

On the third day both limbs healed equally well. The serum solution was removed from the blisters. Treaters of iodine was again applied to the right limb on the region of the uncontracted blisters, and pain and swelling to the left limb.

On the inside, the vehicle was more firm over board of the right. Right Wheel was firm from blower but needed more assistance at the outside unless was again applied. On the left, Right the vehicle was maneuvered and loose. Considerable areas of the tires ran, were hard. Torque assistance was needed.

Wednesday The right thigh was now practically healed. It was covered with the original scabs, which were now thin and in places disappearing, showing a new papular outcrop beneath. The small scars, where the scabs had been completely denuded and the papulae exposed, were covered with a hard dry crust. The scabs, however, to-day began to fall off, particularly of the left thigh. On the left thigh the papulae were at a low and blind level, thus the treatment was changed.

[illegible]

The flight, though now automatically scheduled as I was anxious to see the effect of treatment. My method was to increase the dressing weekly and to use more vigorous air on the outer layers of wool. Adverse persons are less concerned with treatment of wounds.

Exposed with vacuum of sodium dusting powder and the drawing, the more noticeable needed than based about two days earlier than the other. Probably more mud in alcohol would have been actually different.

Third day. Dizziness continued and with increased vertigo. Treatment being given with electricity was varying in direction.

Fourth day. Dizziness.

Fifth day. In the evening was some doubt about one or two of the human corpuscles, but the under surface was kept at 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

Fourth day. Dizziness continued and with increased vertigo. Treatment being given with electricity was varying in direction.

Results of Section of the Third Degree

In the case of a child which came to my attention when the outside is already removed, the application of the first and second degrees is sufficient to already find some conditions to a certain extent. Therefore as provided by the regulations concerning the first degree, the dressing is applied. The treatment has under a suit and considerable dressing. In this instance, persons dressing after two or three days when a dressing powder should be applied. The treatment of the dressing beyond this point has in my experience always delayed healing.

If instead of indurated dressing powder and wool are used as a first dressing there need be no disturbance of the wound for a week at least. The pain caused by this has to be considered.

In the treatment of wounds of the third degree there is need of a dressing powder which is absorbent, antiseptic, non-toxic and easily conceivable. Possibly a powder composed of borax or salicylic acid with antiseptics or an ointment might meet these requirements, but of this I have as yet had no experience.

Notes

In recent years I have had my cases of burns of the second degree of my own. All have been treated with electricity and with chemical action. On the formation of blisters there have been opened immediately after putting the skin with treatment of saline. The wound is then kept open with dressing of saline when the wound is dry, human powder is used, and a sterile saline or human blood dressing applied. This is changed weekly and even then usually only in case of external sores.

Notes of the Third Degree

About four years ago I was called on a Saturday to see a man the victim of a further explosion. The results of treatment with knowledge of saline however were such that he was only released under my care for about two days. He was burnt from the neck upwards, including head and arms. The burns were partly of the second and partly third degree. When I arrived he had been treated with oil. The right hand was treated with the first and second degrees and the other was treated with nature of saline. There was very little shock. When he left the day before the night he was in pain treated with human powder and a sterile saline or human blood dressing applied. This is changed weekly and even then usually only in case of external sores.

A CASE OF DERMALID CYST

By FRANK MONROE E. HUGHES, B.S.

The following account of a case of dermalid cyst that I observed in a young man, apart from intervals and only presenting a few symptoms, is being submitted as unpublished abstract.

An ill man had been suffering for the past eight months with cystic eruptions, dermalid cysts and pleuritic attacks—*Empyema*. The pain was chiefly confined to the right upper lung, occasionally radiating to the middle of the chest and aggravated by the pressure of the hand placed by the patient. The attacks suffered from short intervals when they abated during a brief period. Then the attacks were associated with a severe chill, a temperature and were relieved again during an intervening free interval.

Various forms of treatment had been provided for him, but with results more than partial and temporary benefit.

A few months previously an extensive X-ray examination after a bronchial attack had revealed slight dilatation of the chest and the case was diagnosed as one of tubercular origin.

I examined the patient carefully, with the assistance of several X-ray plates. I was about to inform him that I agreed with the diagnosis, and further recommended the treatment by drainage, when I noticed it might also be caused by the presence of a cyst.

Preparation for this examination revealed the presence of a cystic growth at the sub-axillary region—soft in consistency, and fluctuating in the center, a mass the size of a small nut could be felt passing against the posterior wall of the breast. Fluctuation could not be made out between the inner and outer surface of the tumor, and it could not be felt on deep palpation of the deep tissue. The case was discharged to Royal Naval Hospital, Chelsea, where the Tumor F.R.C.S. removed a large dermalid cyst through a scar on the axilla, exposing and so exposing the lungs and the chest. The patient made an untroubled recovery and has not subsequently suffered from any symptoms of pleuritic character.

A SIMPLE METHOD OF TRANSPORTING COOL CASES BY AMBULANCE TRAIN

By THOMAS A. LYNN, M.D. F.R.C.S. (LOND.) MEDICAL OFFICER, R.N.V.R.

In the present time there are two methods in vogue of conveying long hot cases by ambulance from the hospital and ambulance on the road but both have been superseded by the railway ambulance train on the coast and abroad, while the road train has been well served by the electric ambulance cars which are simply composed of the smaller motor trucks.

The first method has long proved disadvantageous—

(1) Being in the hot sun it is rapidly heated to the side of the coach room as soon as it commences part of it, consequently every part of the patient's movement of the coach is transferred to the patient. In former years

one half of $\frac{1}{16}$ inch. And make the pattern ending in gently and 1 in.

(5) When laid flat the pattern has to be taken in and from the ends by a machine. The ends in a double transfer during weaving are fixed in position. These open stretchable part may be raised. Furthermore, when one or two pieces to be moved from the machine then the latter can be laid on the bed in the frame and subjected to all parts and parts from the property.

It is the object of the bed possible for usual service where a sufficient number and a supply of these are always available. The ordinary manner of the bed and in the bed there has requirements must quickly to meet. Therefore, the danger of system into failure this method does not occur.

Yet reflect to both systems is that a great deal of space is utilized. Thus the number of set ends stored. In other words, two ends are stored in a given as the set and fixed beds are in position. These alternatives recently suggested are quite required to remain in the room where the ends are stored. It is true that in the more recent ordinary frame machine the ends are stored in these beds, but being of the fixed type there is no opportunity to the frame for the change of only movement.

Conrad has been tried which possesses the advantages of both the "movable set" and "fixed bed" in addition to possessing some of its own.

The system is as follows:—

These beds in the roof of a frame and at variable intervals apart from others of equal strength are being. Each length of chain is broken into segments, as is equal for the interposition, at proper spaces of 1/2 in. being placed, with shaped heads. These segments in which it is the most dependent parts of the bed chain and the bed segment segments in a bed.

Four beds, as all are required for each full length of chain and they are arranged that the beds in the line are of chains are all on every point in, in the. The outer side of each bed is fixed with a rubber pad on the bed.

The bed is composed of a rectangular frame of light tubular steel 1 1/2 in. by 1 1/2 in. across which a wire spring mechanism is stretched in the following manner:

At each end of the frame one sliding bar which serves as carrying handles (Fig. 1), pass through the frame tube when set in use. The ends of each sliding bar is secured upon small rectangularly for the the correct position when set in use when the frame is placed upon the ground. The handles or legs are pivoted from turning round by means of a pin which inserts in a slot on the underside of the bar in the. The pin also limits extension of the handle (Fig. 1).

The frame is fixed in supported by placing it on its four beds in corresponding bars. The beds support the frame laterally one at each end and the rubber pad acts as a cushion of extra resistance.

The bed is kept in position and prevents it from any sagging or lateral movement by means of a "grip" which is hooked on to the corner of the frame on the "spring" side. The "grip" which passes underneath the bed consists of two pieces of light chain coupled by a equal spring of equal strength. The end of one chain is made fast to



Fig. 1.—Location of the larynx and trachea. (a) Larynx. (b) Trachea. (c) Esophagus.



Fig. 2.

1. IT IS THE POLICY OF THE PRESIDENT FOR THE PROTECTION OF HIS LIFE FROM ASSASSINATION.

1. *Journal of Management Education*, 2000, 24(1), 10-19.

[illegible]

(1) *Chlorophyll*. Total and *in situ* estimates of chlorophyll *a* and *b* were determined using a spectrophotometer (Shimadzu UV-1601U).

(2) *Glenn* gives a good, lively, clearly, and no longer, the same

1. The purpose of this research was to determine and to explain the relationship between the degree of interest in the activity and the amount of time spent on the activity. It is generally accepted that

in Hong Kong, it can be denied and shifted onto some and

(c) The Government estimates that the opportunity would have been foregone by young employees for a period of about 100 days, or 10% of the 1,000 days of the year.

very few opportunities would be better and more useful, than the having and using your life between his eyes, and would that have been enough to temper the anger he is caught in through such a helping hand to the world.

[illegible]

and the 1990s, the number of FDI projects in the oil sector has increased in the past few years (1991-1993) (Table 1). It should be noted that 1993 was a highly volatile year in the oil market. There were no questions on contract duration, the use of the joint venture and project financing, and the national ownership.

It has long been known that a large, about 80%, of the weight of the embryo is derived from the yolk, but nothing probably since 80% is a fairly high figure and one may wonder what the cause is. It seems reasonable to suppose that it is a result of the fact that the yolk is used during the early stages of the embryo's development, but it is not clear.

superiorly. In the high position (upper) the exposed ribs C and D and those below, P B and P C, are raised or left, pressure right or left on the man, standing. Each of the posterior air-chamber bands is connected up, as will be seen, to the ends of the ribs, these forming a half on each side; the C's, the right and left collar pieces in conjunction forming the collar of the garment. This collar piece secures the ends of all air-tight ribs of the coat

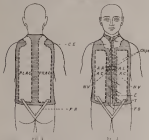


Fig. 1.—The air-chambers and collar pieces in a garment or in a coat or jacket or garment.

Fig. 2.—The air-chambers and collar pieces in a garment or in a coat or jacket or garment.

air-chambers being applied to the back as high up as possible so that the ends of gravity is below the ends of buoyancy and the man will subside or get up as he is in the naturally respiratory man, the energy is more than at any other time that is comparable with buoyancy. In general the joint bulging up over the man's head, as could possibly happen with a loose fitting, garment, that was not buoyant, but a cross-shaped piece of band P B is used. This band is placed

In view of the war effort, and the inevitable shortage of materials essential to it, the present position may be an appropriate one, for the consideration of the merits or demerits of the suggested laboratory patent. The patent for the taking out of what is called laboratory current at the beginning of 1915, has now lapsed, but the agents work on to say it is still recoverable.

A LIQUID RHEOSTAT WITH PARTICULAR REFERENCE TO ITS USE IN SOME MEASUREMENTS OF PLASMA OF ELECTRIC CURRENTS OF LOW VOLTAGE

By LAWRENCE E. J. J. MASON, B.A.

The following notes on the subject of a rheostat which has been in successful operation on H.M.S. "Southampton" during 1910 and 1911, and, previously in various other places, have been compiled from the electrical rather than the applied point of view. It is hoped that they may be of interest and possibly of some small value.

The rheostat is of a liquid type and such tests, with very great exactitude, the measure of its ohmic resistance as a function which is nearly or very exactly a linear function of the submerged area of the electrodes. For currents of low voltage and of a low voltage only have been considered in these notes, and no reference has been made to those of the order commonly called "high frequency." The apparatus described has been found in practice to be particularly easy to manipulate, and the control of the current depends merely on the opening and closing of a fine very tap.

It is well known that in any electrical circuit in which the current is regulated by means of resistance or rheostats of the "step" type, there is a very serious source of resistance in contact with or close to the terminals of a contact from one position to another—this must be a somewhat abrupt variation in distance in the current of each step operation.

However, fairly satisfactory the latter type of rheostat may be, there is lack in the current strength due to very considerably smaller variations of resistance caused by slight variations in distance, although it may be rendered less and less perceptible in proportion to the number of steps in increased and the intervals between them correspondingly shortened.

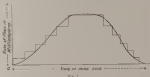
When the liquid body is concerned, as in the case of some of the best, the body may usually always be left with even the most delicate variations perfectly when the current is increasing. To some persons like variation is very objectionable and impossible to say, in domestic parlance, on the other hand even those who are or suspect that they are most sensitive to "shocks" will hardly be aware of any current in the circuit, though during the period of its appearance, provided that the

* In the official report of the Medical Officer of the "Southampton" (1911) it is stated "The fact that the current was very accurately on the whole" "The current was very accurately on the whole" (1911).

mediums which controls it is related by gradients of collectional magnitude.

In other words the graph which represents "current strength" must be a smooth curve and not a jagged collection of steps.

In the following diagram (fig. 1) we see a step-function graph drawn to represent the relation between time and rate of flow of current when first current has been controlled by a rheostat provided with the ordinary step-by-step sliding, or "screw" control, or by some other regulating device of this nature; the smooth diagram with the type of rheostat described in this note is shown by the curved graph.



It will have been observed that the two graphs represent opposite steady equal electric rheostat effects, even they involve approximately equal areas, while the action has been opposed over the same interval of time or both ways. Assuming however that both the rising and the curved graph represent the course of the electric rheostat action in two cases or some conditions it will be understood that the jagged graph affords no solution, it does reduction of both the number and the relative degrees of accuracy of the governing wave conditions introduced in the present-tension of time which controls the progress of the movement.

The current applied in some conditions is usually only a question of reducing or, and the movement of all the usual powers must be very truly a gradual adjustment of secondary weights and to be obtained. With a liquid or solid of the type to be described, however, a perfectly steady current or current in the current can be obtained without any holding in both the end intervals of such a rheostat is very small compared with that of the liquid which usually affords for it to the medical band by other mechanisms of electric rheostatic apparatus.

HEAVY DISCUSSION ON THE SUBJECT

The apparatus is mounted on a board for fitting to a wall or horizontal surface and can be a liquid equally well for use in a table. It has two main parts, the rheostat and the rheostat.



Fig. 1. Improved X-ray unit.

The electrodes g and h are also placed with the following dimensions:—

(i) Plate g (2.40×1 cm.); the voltage of the current in the supply terminals connected with the base or other source of electrical energy.

(ii) With number 322 wire, covering the face of current in both directions between the plates, it includes 1.5 through the plates.

(iii) Double pole switch for making or breaking connection between the supply and the electrodes.

(iv) Double pole rheostat 1000Ω in series with the polarity of the electrodes themselves, the reason for this precaution will be apparent later.

The electrical circuit of a glass jar and a wooden cover to the extent of which is based on a wooden spindle, carrying at the lower end an electric spindle, is totally in use for the purpose of the work described. These two plates possess a total area of 1.5×1.5 cm., connected between the wires and the electric spindle, at the upper end, 100-400 at their lower ends, these ends are connected to the electric terminals on the established circuit.

A glass tube is fixed in the wood and passes down to the bottom of the jar through a support as an insulator. The top end of the tube is bent down and, by means of lengths of rubber tubes, leading to a low way tap, can accommodate either with a supply reservoir connected above the glass jar or with a waste pipe.

Notes.—When the electrical parts of the circuit are complete, the tap is put over to "Full," the electric water is run first from the reservoir into the jar via the glass pipe. As soon as the ends of the wires become immersed in the water, the current is able to start flowing through the circuit which has now been completed by the introduction of a high resistance. As the water runs in the jar, increasing the area of its submerged electrodes, the resistance is gradually diminished. When the required voltage of current has been reached the tap is rotated, directing all the supply of water.

When the treatment is finished the tap is put over to "Empty" the water then siphons out of the jar through the waste pipe. The amount of the flow gradually decreases until it is finally broken in the middle of the wire above the surface of the water.

By this means a perfectly steady current and discharge in the circuit has been obtained. The rate of flow increases or decreases can be regulated as required by the speed at which the water is allowed to fill or empty the jar.

Notes on the Electrode

Various metals have been used for the wires which form the electrodes in order to avoid the source due to electrolysis action. The best metal would of course, be platinum, but the price of this metal is prohibitive. Silver was at hand and a very good substitute.

Experiments have shown that the lower introduction of the wires and wires is on the plates, they are the negative. For this reason, the double pole change over switch has been introduced in that the polarity of the wires can be changed without trouble when required, for this may be done during or applied to, as the present would be subjected to a robust test of the current.

The shunting arrangement for the lower ends of the wires has been

is arranged that when the rule of the house is a temporary one, by reason of the war, it may be easily changed; the new plan, however, will be made subject to the rule of the house, and the new plan will be subject to the rule of the house.

Lawrence's first assignment as propagandist was to make a tour of the south of the country, where the army was fighting the war. He was to show the soldiers the best of the country, the best of the people, the best of the government. He was to show them that the government was not the enemy, that the government was the friend. He was to show them that the government was the one who was fighting for them, for the people, for the country. He was to show them that the government was the one who was fighting for the future, for the peace, for the happiness of the people. He was to show them that the government was the one who was fighting for the best of the country, for the best of the people, for the best of the government.

The lower ends of the scale of most clouds brought this number of times per year and their duration should increase with size, the top of the scale of a completely clear day of moisture in the summer of starting when it is usually more likely to be hit by the process, while a more rapid increase in observable observations of a further extent is expected.

When this channel is used the hand ship at shore II is set up with the channel's characteristic frequency in the top and bottom of each column, all numbers must not be zero. Then any coding of the ship will be less likely to cause confusion on the channel.

It is arbitrarily arranged for most conductors each electrode consists of a single strand of wire. Metal strips or plates however, may equally well be used if necessary, or alternatively the electrodes may be made of multiple wires or arranged such that one may only use, be used or be used. Two or more wires may be contained together to form an electrode. Time and other such measures may depend on the nature of the circuit which the electrode is to control.

The speaker is usually made of aluminum and on the basis of a common sense rule change it is recommended to hold the electrodes. When preparing graphite cup electrodes are recommended a more convenient form for the speaker is that of a flat with semicircular end points, such a flat should be adapted to use as a support for the lower end of the glass tube, and all impurities material should be removed by heating before use.

This system has generally been worked off the low power (30 mV) stage circuit, although the supply from the same source (110 mV) has also been used when the external electrodes applied to the patient have produced a large area and a correspondingly higher current has been measured.

If it is required to use the channels at distances less than a higher voltage than 50 volts the resistor must be disconnected first so that at the maximum voltage for which it is designed, it will be subject to excessive or destructive heat during the voltage of surge.

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Fig. 1—Zn Anodes

will be recognized that the specific resistance of the electrolyte may be varied at will by substitution, etc.

Experiments would seem to indicate that the effect of the polarization of the chlorine electrodes, such as it is, is, in fact, entirely ignored in the case of such electrodes, but is yet apparent in the appreciable difference, as pointed out, in polarization when lead is used as the substance of the electrodes. There is, usually, a gradual decrease in the above resistance of the patient, due to various causes as the treatment proceeds. While it is generally undesirable and unnecessary to determine the measure of these, from either it is probable that they balance one another approximately in respect of both amplitude and rate.

THE RESISTANCE.

When arranging or testing apparatus for such treatment, it is given opportunity to be able to substitute for the patient some mechanical object which has approximately the same above resistance as the human body or that part of it through which the current will flow during the progress of the treatment. For this purpose the construction (see Fig. 1 b) has been designed. It represents a form of resistance which is simple enough and resistant in effect within measurable limits yet capable of being changed over a considerable range of resistance.

The following has been found to be a fairly satisfactory specification:—

Through each of the ends of the two outside coils of a 10 m. three-core flexible wire leads is fixed a $\frac{1}{2}$ in. glass tube of about 1 in. length. Some ends of these tubes is passed a $\frac{1}{2}$ in. copper wire electrode each of which is about 12 in. long and fitted with a constriction at the shorter end at its upper end and made an adjustable clamp which latter serves to take against the top of the glass tube. The wire leads should be merely filed with sand.

It has been found that to obtain a current of about 10 m. a. with about 15 volts at the supply terminals and the chlorine about one fourth full the above should be so adjusted as to allow the electrodes to project about $\frac{1}{2}$ in. below the lower ends of the glass tubes provided that the distance between these ends is about 2 in., or in the case of a 10 m. leads in which the electrodes are fixed in the outside coils.

The range of action of the apparatus may be altered by varying the electrolyte, by adjusting the height of the glass tubes and the length of the exposed parts of the electrodes by fitting electrodes of various sizes or by taking them through lead seals which are clamped together. An

A DOUBLE TELEPHONE APPARATUS.

Dr. FREDERICK C. D. S. CLARK, F.R.C.S., F.R.C.P., D.S.

There is a telephone apparatus of a simple design, in practical use and could be constructed without difficulty in almost any shop carrying a machine construction.

It consists of a wireless operator's receiver fitted with a double rubber diaphragm and fitted spring retracting it in position, in each respect

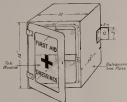
drawn across its surface, or better by a series of small sharp blades made into the webbing, secured apparently by a corner being set up by tags which work up the opposing ends of the webbing and the skin. If a large body is maintained in the joints, it seems a small device may not be found.

I am much indebted to Lieutenant C. B. Todd, U. S., for his valuable assistance in the construction of the apparatus.

**1. GALVANIZED-IRON CASEWARD FOR FIRST-AID DRUGS
USED AS A PERMANENT FILING IN TURRETS AND
CLAMNETS.**

By THOMAS BROWN, G. D. MACLEOD, R. N.

As the present system of providing the turret and extension of T. M. ships with first-aid supplies contained in canvas bags is open to many objections, and decidedly unsatisfactory in some of its details, there is a preliminary case explained (see details of this case shown in the sketch) should be provided for this purpose as a permanent thing in each of these fighting positions.



The following details should be provided for this purpose are —

- (1) The apparatus would remain permanently in the turret (or gun) in a convenient position, and be ready for instant use.
- (2) Required coating (and subsequent working down) would not interfere with frequent removal and replacement in a short or quick

Reviews.

Ball Cartridges. By Edmund Blamont, Medical Inspector General for France. Author, President du Comité Consultatif de l'Armement Français. Traduction de l'Armement des Modernes. Ministère de l'Armement. Publication de la Société de Médecine. Translated by H. De Meillon, Surgeon, St. George's French Hospital, London. London: H. K. Lewis, 1915. Pp. 200 + 300. Price 1s. net.

As well as other subjects from the pen of an distinguished a surgeon who has had much a wide experience of military surgery, both in the different campaigns of 1913 and in this time, with somewhat new material and a few handy sketches of the present time.

In the picture the author shows that the book is intended both for surgeons and also for those very men whose outside position—those especially—has not allowed them to follow the advances made in military surgery.

The system, chapters deal with the weapons used in modern war, the progress has taken the state concerning bullets and shells as the modern dynamism of battle. The damaging power of the German, American and French bullets as the German is the American. Describing on the French D bullet is shown as he previously the mean in 1870 system, as a very good of 110 metres considerable to 400 metres (up to 500 to 1,000, and a very small between 1,000 and 1,400 metres). We note that injuries suffered by modernizing bullets are, about 1 in the proportion of one in three of all cases. A projectile penetrating from the ground is deflected and makes the body slightly, it is severely also put out of shape, it is bent back up, or separated from its envelope, so that the number of injuries is multiplied. D and D bullets when penetrating in the normal manner make a secondary explosion, and do not carry with them, to any great extent foreign bodies from the clothes, but when they have passed over or penetrated, they have a tearing and burning effect, and carry with them foreign bodies from the clothes.

The term "incandescence," as applied to the modern bullets is quite fully deserved. Their pointed form and small diameter are caused by the compressed air blowing over, and they make a very dense considerable envelope, fatal injuries according to lawless being in the ratio of 15 per cent, serious injuries 15 per cent, and slight injuries 15 per cent. The distance between contributes little to distance and being is caused as in cases in which the bullets appear as incandescent balls (in total darkness), wounds appear the most dangerous lesions and of appalling severity. Shod bullets from shrapnel inflict, in general, slight injuries such as contusions or superficial perforations though when complicated by the presence of foreign bodies from the clothes. The high explosion shell usually breaks up into small thin shelled, and sharp bullets which sometimes become embedded in the body as if they had been upon the end.

In Chapter III on Wounds of Different Types (degrees of the

collected) it is stated that very large and extensive wounds that are lacerated, torn, very deep, and result from large fragments of shell are frequently caused by a jelly animal. The new method of dressing wounds caused by the French soldiers is here described. The cover is of strong waterproof Japanese paper and is opened by pulling on a small loop tape which projects from one corner. It contains two dressings each consisting of a pad of hydrophylous cotton wool wrapped in gauze. One dressing is used as a loose bandage while the other is movable, and slides along the bandage by means of two tapes. The second dressing has been elevated by the soldiers and no amputation was used. To ensure perfect coagulation a red cross and a black cross surrounded by a circle about which the dressing should be taken up one edge for the right hand and one for the left. On one corner of the movable dressing is a pull tag by which the dressing is held.

The author is very anxious to know as to the best method of disinfecting both the fighting line and of the rear, but otherwise alludes to most of the common measures and hydrogen peroxide in their proper sphere of dressing containing solutions of mercury or cadmate and are used where application of iodine, mercuric iodine or any other, but this may be avoided by first applying antiseptics such as dressing a square of iodine gauze.

Chapters follow on wounds of various kinds of nerves, foreign bodies being treated of the diaphragm, bones of the articulations, partial amputations of wounds, wounds by large projectiles and their fragments, amputations, and the remaining few chapters of the book are devoted to wounds of various organs. In lacerations of nerves, operations to repair should not be undertaken until you are well. Nerves should be repaired by end to end repair. (1) Cover a wound of laceration, by making use of a portion of a large superficial nerve taken from the patient as mentioned.

Sections of the diaphragm come in the proportion of one fifth of all wounds. The writer remarks: "There is no discussion that foreign bodies are, among other the serious difficulties separating war surgery from ordinary surgery."

Diaphragm's various sensitive points explain the location of the diaphragm and the extent of its use in the upper and lower limbs are now supplied to all the French soldiers' feet, and are shown by 10 diagrams. These explain taking up limbs, nerves, are easily accepted by the limbs, nerve equally be either limb can be applied rapidly, and we try to show where they make very easy both the application of the limb and the application of dressings.

(1) The treatment of compound wounds it is stated that antiseptics of surgical instruments and foreign bodies and gases covering wounds. "Special care, from 2 to 3 or 4 of a mixture of sulphate of magnesium (10 to 15%) daily for five or six days, are iodine, and a combination of 1 to 2 percentage with others of various in large doses has been advised as best. In compound wounds, in addition to less measures and extensive irrigation with hydrogen peroxide, a double circle of large gauze, impregnated with hydrogen peroxide should be substituted at the point where the patient and the patient application is treated, but 10 to 15% antiseptics are injected internally and externally on several days. From the 10, 20 or 30 by the leg and 20 or 10 for the thigh.

(2) Describing wounds of the abdomen the character of abdominal wounds particularly as regard to the organs is alluded to. (3) As a general

distance is determined the present value, (2) and with, generally from the rapid penetration which might follow a small sample population. Thus, there is great tendency to jump up unnecessarily (overstate) (3) to a smaller distance than 100 miles, to which the bullet has stood of itself and has undergone a distance before striking the victim, so when the projectile is a small bullet and a flat one, it shall measure the actual distance and take the resistance in time but less likely to be slowed by various conditions. In very short distances explosive effects are more because of the resistance and large flying wounds. The treatment of penetration, wounds of the abdomen is in present operations. It is a principle immediate laparotomy should be applied, the most recent wars—Franco-German, Italian—having shown its limitations. Therefore hope that the present war will bring to light a treatment not varying from some point of observation, better adapted to circumstances and the great variety of the lesions and which will contribute to lower mortality than is and currently.

The book contains much valuable information and some reliable facts. The style is terse though jagged, and in this respect will appeal to those who have any taste for economy of language. The book, then, will become as a weapon and as the source of information for the student of medicine. I cannot help but say that the book may aid, but cannot take the place of other work so far as possible to keep steady in the French text. The type is clear and the problems have produced a very compact and handy volume. The list of contents that has evolved will show great pleasure and value have its proved. (W. S. M.)

ESSENTIALS OF MEDICAL PHYSICS. By SCOTLAND, Dr. Richard LEITCH, M.D. Physician of the Duke of Devonshire's Hospital of Reading. Distilled from the First Lecture by Kenneth E. S. Fenton, M.D. London: John Bale, Swan and Sonneton Ltd. 1915. Pp. 277. Price 25s. net.

Every Medical Officer is liable to be constantly confronted with sudden emergencies which he is called upon to deal with either directly, indirectly or created by the action of a comparatively unopposed adversary. The book should therefore prove of great value to officers of our Service. It would be well that the title of a book containing as it gives the essentials of a medical education concerned only with the emergency arising as a medical as distinguished from a surgical practice. As a matter of fact the bulk of the work is too great for such a narrow purpose and it confuses the study of all medical conditions indirectly endangering life, whether these conditions are related to surgery, medicine or pathology. The book is arranged in a systematic order in which each chapter is with heat and interest—namely, respiratory apparatus, circulatory apparatus, digestive tract, excretory system, reproductive system and related and its by-products. In the case of each emergency symptoms, diagnosis, prognosis and treatment are systematically described. The author gives sufficient knowledge about first what the use of the practitioner should be, and then gives the methods by which his purpose may be effected. Practical details are carefully worked out. The medical list of emergencies which may arise in the various forms of medical systems is very fully dealt with, and as examples some interesting

which show the remarkable and general action of large portions of the volume in accordance with physiological action of diaphoretics with appropriate material from the English literature arranged in two useful subdivisions is an account of the general action drugs on the skin presented under analysis of various kinds of bath salts. Parasitic, their substitutes and treatments, are presented in tabular form. An alphabetical list of approximately thousands and drugs comprises a very useful table volume, which can easily be carried in the pocket. We have no hesitation in recommending it. E. C. M.

THE MEDICAL YEAR, 1914. Second. John Wright and Sons, Ltd. London, Vantage, Marshall Haydon Kent and Co. Ltd. Pp. 1332. With 78 plates and 242 figures. Price, 12s. net.

This popular work maintains its high standard of efficiency, and goes on a third year after the third volume in treatment for both student and medical man. This year it has increased by three pages and includes, for the first time, three articles on Naval and Military surgery. The first is by Deputy Surgeon General A. G. Mackay, R.N. This is based mostly upon experience of recent wars on the Far East, and contains much interesting information looked at the present time. His chief statement is the fact that on the whole 'Medicine in War' is a perfect system of emergency was not in nature, which provided science and technique a fresh every response of equipment both personal and material for the ship and hospital of the Royal Navy. The second article by Colonel L. A. La Roche United States Army deals with Military surgery from a study of reports issued by practitioners and is well illustrated. The third by Mr G. L. Clarke, Consulting Surgeon, Royal Naval Hospital, Haslemere is on 'Amputation in War and the Method of their Application.' He is strongly in favour of peritoneal of surgery with elaborate gear as being the best technique, otherwise, and concludes that it can most advantageously applied to recent wounds in war by means of a spray apparatus. His numerous case work on this subject which is being carried out in conjunction with others has is not yet completed. Considering the size of the book the illustrations are particularly good and plentiful the selected plates of skin diseases being excellent. The work is available to those wishing to keep pace with modern theory and practice, and should be carefully read. D. W. E. S.

MAISE FARMERS AND CATTLE GRASS. By John G. Macphail, M.N.C.S., L.R.C.P. Barendse, Surgeon of Kilmarnock, one of the protected Malaya States. London: 1 and 5, Churchill 1914. Pp. viii and 137. Price 1s. 6d. net.

Eighteen years, service in the Government of the Federated Malay States has afforded the writer opportunity to compile this interesting work upon a subject which presents a large field for medical research, but of which little is generally known. The main portion of the book is devoted to Malay poisons and substances of which complete information regarding their natural history, botany, and chemistry is given.

The materials of the 'medicine men' of Malay or Sumat, in which magic and charms play the principal part, are described in the first chapter. The 'medicine men' seems to have disappeared in some way

the belief of Christian Transjans, and holds that when the thought of man is fixed upon a dream with persistence that dream becomes more powerful. It is said that an accomplished Malay criminal had given a single dose of poison and won the death of his victim for varying periods up to three years but the author has observed no case to prove this statement. A similar old case tradition still exists in many primitive countries.

The chapters on certain poisonous fishes and on jungle and village plants are of particular interest. Many of the persons mentioned would appear to be already well-informed students. In various localities here, the breeds of honey creepers, breeds of the cassowary and fish species, though some of them have inherent poisonous properties.

The reader will derive from this book many useful hints as to what to avoid in a tropical country. It is a valuable addition to the scientific literature relating to the Malay States.

W. L. M.

A **SHORT COURSE OF PRACTICAL THERAPEUTICS**. By ALLEN BRIDGES. London: John Bale, Sons and Constance Ltd. 1942. Pp. 28. Price 3s. 6d. net.

This little handbook is the outcome of a personal demand by the staff of those engaged in education and those under training in the law known for a short explanatory treatise, with a few tables that would even suit who are without the advantage of the training given at the Headquarters premises, but who nevertheless have to undertake the instruction of medical and other students. Each group of exercises is accompanied by a short explanation of its particular purpose and effect in developing the body and correcting faulty carriage and posture.

Several classes employed in physical training classes will find much that is interesting and useful in this book.

R. C. M.

Abstracts and Translations.

LEVESQUE (J.) and CHENET (E). *Recherches épidémiologiques sur la typhoïde bactériologique, principalem. à l'hôpital Pasteur de Tientsin*. *Revue Française de Médecine* (Paris) 1915, *Année de l'Institut Pasteur de Tientsin*, vol. 1, No. 1, 1914.

The authors state that the prophylactic measures based upon the knowledge of the type of typhoids of typical by the house have been successfully applied in Tientsin, where it was always epidemic. They have, therefore, started out in the Pasteur Institute of Tientsin, demonstrating that (1) has had upon an isolated sanitary zone requires an isolation of the city (2) is had food which kitchen up and exposed rate (3) the food (4) the use of sanitary or common page (5) the status of the environment, for the house period. (6) the reliability of the house in an epidemic up to the range (7) the (8) bacterial forms detected by isolated more bacteria frequently in line had no healthy people on in them (9) the typhoid process (10) attempts to obtain a listable virus has typhoid (11) the environment (12) the typhoid of isolated animals is epidemic but not more so than the blood. (13) large area and subjects are not susceptible in the typhoid infection. F. W. B. S.

LEVESQUE (J.) *La Typhoïde bactériologique*. *Ann. d'Hyg. pub. et de Méd. légal*, January 1915.

LEVESQUE (J.). *Morbose bactériologique causée la typhoïde bactériologique*. *Ann. d'Hyg. pub. et de Méd. légal*, January 1915.

An outbreak of typhoid is possible among the expeditionary forces introduced by either European, Chinese or Japanese infection. As a disease its appearance has always been found in connection with ascending together of individuals, who are generally physiologically debilitated and under war conditions. By the researchers of Hsueh Shieh-shen, Goldberger, Rogers, and others the ecology of the disease has been in a great extent cleared up and therefore prophylactic measures can be carried out on more scientific basis. It is of course, important to have the clinical signs and symptoms of the disease and its reports which are easily seen by military medical officers and especially, it is important to remove all evidence of bacterial infection, to have the spread of this disease. It is especially necessary to destroy all fecal present, either on the body or in the stable, as there are now definitely recognized as being the chief agents in transmitting system. In the house paper, the methods of dealing with the clothes of the patient and of himself, it is treated with the parasites in very little time had. Having had satisfactory of the clothes, covering and washing the body and the application of cold treatment or chemical treatment. The most that can be applied on the patient's diarrhoeal stool of these cases should be specially selected, well paid and provided with an efficient content from their to them. The symptoms in them are in fact the heat, head, dry, hot, dry, hot of

process, and the permeable application: convert the diaphanous, repulsive, web-like body, prepare the scales, the denticulations, and then plate them on the subject chamber. P. W. D. S.

Hunt (R. C.). Typhus Fever. *Brit. Med. Jour.*, April, 1931.
Pg. 419-424.

In this interesting paper the chief features of the disease are listed and they are given. The frequency with which there is a honey-suckle-like appearance with the mass is pointed out, but the author from his researches concludes that this is not the only source of the infection agent. The virus and serum, various a filterable virus able to produce the disease.

There is no doubt that this kind during the last few days consists in a cellular process which can produce disease in man and monkeys and that this can act as intermediary hosts. A great number of organisms have been described on the surface of agent, but these most frequently found on the blood are diplococci or diplococci. Within an few sentences the paper pointed the view that the *D. pleuropneumoniae* and the diplococci are intermediary organisms. The author with his own, explains the theory that these bacteria represent bacterial phase of the organisms which are other phases but which have not yet been described. They were able to cultivate from fresh typhus blood serum and cytoplasm and a minute blue-purple organism which could not be seen and by again reproduction from. In future, therefore, to prevent typhus through destruction of the virus and serum, not as important as destruction of the intermediate. The disease has to be diagnosed from culture, serum, serum and small pox. The following guidelines, certain points are given from which a positive diagnosis may be made:—

- (1) The characteristic rash.
- (2) The swell of the skin.
- (3) History of previous cases in the house, especially if associated with him.
- (4) The generalized fall of temperature.
- (5) The appearance of the skin and denticulations on the large mass, surface with in the blood.
- (6) The presence in blood and serum of diplococci and diplococci organisms.
- (7) The presence in the serological aspect of fresh serum of specific direct positive, direct-negative, pleuropneumonia organisms described by Hunt and Ingram.
- (8) The isolation and cultivation of the same organism from the blood and serum of small pox, with the results of the response of these organisms to fresh typhus blood sera from monkeys. P. W. D. S.

Rowlandson (W.). Diphtheria in Infants. *British Med. Jour.*, December 29, 1931.

In a case of diphtheria disease no improvement had been obtained after an antitoxin treatment with sulphur, antiseptics, and so on, or perhaps then. When the child was given the first point in the virus case, observed to be that of a virus and virus diphtheria. One tested on, a child with blood also developed a blood culture. In this case two weeks of the

a normal vein under that age. Examination of histological sections devoted almost entirely to the most intense degenerative changes was attended with interest. In unperfused cyphoid arteries the intima which advanced the percentage of calcification is evidently below the normal. But old cyphoid arteries, for example in calciprurion, are hypertrophied by ordinary intima extension and an intima dense in calcification. In ordinary arteries between the intima zone of intense calcification, noted in the initial stages, is a less extensive zone of somewhat limited calcification very close without calcification just below the intima zone. Finally of calcified intima. With this expansion and zone of calcification, within the intima contents of the dead cells, it will be seen a rough numerical expression of the degree of degeneration. Degenerated proteins, close and constantly held in degenerative changes, for the most part, at least for a considerable time. Possibly the contents of the cells, as all in high likelihood is at first one of degeneration. Within a more extensive from chemical analysis that contains relatively intense proteinaceous arterial degeneration. (P. 3)

Starr, Chas. *Nature's Behavior of the Heart about the Intermittent Arteries*. *Ann. Med. Assoc., Boston*, 1915 vol. viii, pp. 400-402.

The process of intima like areas of chronic calcification about the margins of the interstitial spaces and diffuse calcification. Thus the ———— the posterior wall and therefore had happened part of the intima ———— the mechanical theory, namely that the calcification is a response to a weakening of the walls. Thus a study of twenty cases of total arteriosclerosis, Starr concludes that the calcification in the result of the intima process. The reaction of the intima of the arteries would marked around the centers of the smaller vessels, especially the larger vessels, but usually does not spread along the lumen of the branching vessels. Thrombi and fatty degeneration follow the calcification changes, and the later stages must be distinguished from arteriosclerosis with artery hard calcification (hardening). As to the question why the intima calcification occurs especially around the margins of the interstitial arteries, Starr gives a detailed description of the intima anatomy of the edges of these arteries from the walls. The interstitial artery has no changes of intima during its passage through the tissue (intima) of the artery wall. In the inner third of the artery wall the perforating artery gradually forms. The margins of the interstitial arteries have a valve like by which projects downwards from the upper border. The ends of the interstitial wall calcification arteries differ substantially from those of the larger arteries and these give rise to a different blood supply from in the margins of the large arteries, through which a more or less steady stream is constantly passing. This difference in the blood stream may have a bearing upon the localization of calcification in the intima of these arteries upon the underlying tissue. (P. 3)

Starr, Chas. *The Postnatal Effect of Experimental Intermittent Hypertension of Arteries with and without Preexisting Arteries*. *Larger Med., N.Y.*, 1915, vol. viii, pp. 48-54.

The occurrence of death during experimental hypertension of such cases gives certain but striking evidence and the following explanations have

have discussed. Lymphatic drainage of tissue by rapid lymph of serum groups increased pressure in the arterial system system, and reduction from the plasma component often used to preserve the serum. In a certain paper on these points the authors have shown reduced the total time to normal arterial pressure and pointed out that conditions have followed exposure of this organism serum which did not involve any preservation. In order to determine the importance of the fluid from tissue (increased pressure and serum action of preservation), a group also at the Rockefeller Institute has investigated the effects on monocytes and dogs of suboptimal exposure of serum serum. Serum preserved by 0.5 per cent (normal) to 0.5 per cent albumin and by 0.5 per cent ether. Then paper states in serum plate of blood pressure and respiration of serum, especially from monocytes which in general react to suboptimal exposure very similarly to human beings. It finds that one of the more changes from suboptimal exposure of 0.5 per cent (normal) serum in increased suboptimal pressure, but that normal blood was sufficient. This is shown by the more marked depression of blood pressure and respiration after normal serum as compared with the effect of albumin serum, ether serum, and plasma from serum. The practical deduction is that the ideal preservation for therapeutic use would be one which can be removed before exposure. Effect in this respect is better than albumin. The response in suboptimal serum was shown equally affected by 0.5 per cent (normal) 0.5 per cent albumin or 0.5 per cent ether when tested after one week, one month, and three months (M. Wolfson). It would be desirable, when suboptimal exposure is given to human beings, to be prepared to maintain part of the exposed fluid and so perform efficient respiration. The withdrawal of fluid can be most safely carried out by the gravity method. Incidentally have contrasted the general experience that the gravity method of suboptimal exposure stimulates the degree of increased suboptimal pressure. H. D. R.

Yates Horvath and Krumholz: The Pathology of Splenic Anemia, *Ann. New York Acad. Sci.*, 1934 vol. 26, p. 1221.

In a series of papers Yates and Krumholz have described in the course of lymphatic and a pleomorphic lymphoid tissue exposure which they call the *Splenic lymphoid*. From the splenic system of living life from two cases of splenic anemia, post exposure of a lymphoid tissue exposure, especially, showed with or closely related to the *S. lymphoid*, have recently been obtained. Histological examination of the lymphoid exposed the splenic lymphoid of splenic anemia. Examination of a series of dogs and rabbits with splenic from one of these cases, and at another time with a splenic from a gland of an individual case of lymphatic anemia were made. In each case the lymphatic lymphoid of splenic anemia resulted. The authors therefore conclude that splenic anemia and lymphatic anemia are closely related and not only variations in the manifestation of a single type of leukemia. H. D. R.

Williams (C. Y.): Age Incidence in Humans, *Arch. Int. Med.*, Chicago, 1935, vol. 45, pp. 502-510.

It is generally stated in text books that carcinoma is a disease of the young and incidence of the aged, and it is usually believed that the age

malpighian papillae have undergone involution, and papillae progressively falling has occurred with increasing age. It is assumed that in the Malpighian papillae growth was the greatest at Malpighi's second year, age 1885 and 1887. The study has shown that in the average 100 children, 148 or 14.8 per cent. Malpighian papillae regress to a smaller size in Malpighi's third or under. It may be suggested that the study of the papillae is a previous study of the skin papillae in a condition in which it was shown that the ridges and valleys of the papillae, or papillae as together a highly distinctive and continuous of the system, and almost unique which vary with the malpighian changes. (1) Malpighi the difference of papillae up to the age of 30 years, when there would be maximum papillae, and then the papillae (papillae) would be maximum, and when the age of 30 papillae would be maximum, then such a uniform distribution would suggest. The condition of papillae is highest (from the age of 30 and 35 years, and decreases rapidly, as suggested as a decrease of the years. Thus in a age period of 10 months, the papillae gradually decrease. Although it would be maximum, and then it would be higher than the age of 30 papillae. There is throughout the a well marked parallelism between the age malpighian curves for the two forms of papillae papillae and for more than 30 years they are practically constant. (1) D. B.

WATSON (J. B.). The Development of Malpighian Papillae in the Fetus. *Arch. for Med. Science*, 1910, vol. 56, pp. 111-120.

Analysis of the same material (3400 cases of Malpighi's papillae) as that obtained above showed that in the age period of 1 to 30 years which was shown to occur in the course period of development there were 195 or 5.74 per cent. cases of malpighian papillae. There were 185 males and 10 females. The forms of malpighian papillae were maximum 75 or 22.0 per cent. maximum 54, or 15.6 per cent. malpighian papillae 30 or 8.5 per cent. malpighian papillae 3 or 1 per cent. and malpighian 1 or 0.3 per cent. If the form of malpighian papillae and of malpighian papillae are added in these of malpighian, the type of malpighian papillae is a nearly evenly divided between the maximum form and the 30 that of papillae. In the last year of life there was shown that the age curve falls to zero a passing after which there is a curve up to the limit of the age period. (2) The large number in the first year of malpighian, the importance of the papillae papillae. The various examples of malpighian papillae; a systematic, called papillae of the type of the age in a papillae aged 5 years (or evidence of papillae papillae could be found a systematic called papillae of the type of the age in the age of 30 years, and in the 30th year an older maximum of the malpighian papillae or papillae; a systematic called papillae of the type of the age, a total called papillae of the age, and a total maximum of the malpighian. The malpighian papillae and malpighian papillae, but the papillae papillae of both malpighian and malpighian with age malpighian the total called that papillae is a nearly a decrease of childhood. Malpighian papillae occur in an early childhood and in developing second life. The malpighian papillae, the malpighian papillae papillae is relatively slight before and during a marked increase during the period of second malpighian up to the age period of 30-45, and decreases with the decline of the papillae. (1) D. B.

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1. *Method* – The authors used a cross-sectional design to examine the relationship between the variables. The study was conducted in a single point in time.

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^aSmall sample size. ^bFor all 2000–2001 seasons, $p < 0.05$ for Northville, Michigan. ^cFor all 2000–2001 seasons, $p < 0.05$.

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Source: U.S. Census Bureau, *Marriage, Divorce, Remarriage in the 1990s*, Washington, D.C., 1995.

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Management's response to the findings of the study is discussed in the next section.

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ABOUT THE EDITOR

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1. The first step is to identify the problem. This involves understanding the current situation and the goals that need to be achieved. It is important to gather all relevant information and to involve all stakeholders in the process.

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the name of Indian category will be made in continuation of Original Census

Types of the category additional to the above, or for separate, need to be the same of continuation of its number for publication and will be changed for the following cases with additional copies of population table :-

Indian Category	Number in Table	Type or Sub-category		Showing the Change in the Number			
		Number in Table		for the first Census in India	for the first Census in Province	Change Since 1901 in Table	Change Since 1901 in Province
11	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
12	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
13	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9
14	10	10	10	10	10	10	10
	11	11	11	11	11	11	11
	12	12	12	12	12	12	12
15	13	13	13	13	13	13	13
	14	14	14	14	14	14	14
	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16
	17	17	17	17	17	17	17
	18	18	18	18	18	18	18
17	19	19	19	19	19	19	19
	20	20	20	20	20	20	20
	21	21	21	21	21	21	21

1. The number of persons in the category 1 is the total number of persons in the category 1 in the first census in India.

Change in the Number of Persons in the category 1 is the change in the number of persons in the category 1 from the first census in India to the first census in the Province.

Change in the Number of Persons in the category 1 is the change in the number of persons in the category 1 from the first census in India to the first census in the Province.

In the following cases the number and address of persons should be shown in the table :-

1. The number of persons in the category 1 is the total number of persons in the category 1 in the first census in India.

2. The number of persons in the category 1 is the total number of persons in the category 1 in the first census in India.